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IN THE REDWOOD FOREST
Photo by Herbert W. Gleason

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SAVE THE REDWOODS*

By JOHN MUIR

NOTE: In his intimate acquaintance with nature John Muir recognized and loved everything that was natural and honest, but his interest focused upon the things which represented the most splendid expressions of creative power. Not only did he instinctively select for close personal companionship the elements of nature that had most to give for him, but, as no other western naturalist has done, he set forth their fullest meaning in the language of the people.

Of all Muir's special interests in nature, it is probable that none made to him a stronger appeal than the giant Sequoias of the Sierra and Coast Range forests. It was his firm conviction that they represented the supremest examples of majesty among all living things, and his journey around the earth to compare the Big Trees with the trees of the world left him with settled conviction regarding the correctness of this view. For many years he gave himself to the protection of these "Kings of the forest, the noblest of a noble race." At this time of national movement for the preservation of these forests through the Save-the-Redwoods League, it is particularly fitting that we present the sentiments written years ago, in support of just such a movement, by the friend who fought so hard, so faithfully, and so long in this good cause. — JOHN CAMPBELL MERRIAM, Chairman, Executive Committee of the Save-the-Redwoods League.

WE are often told that the world is going from bad to worse, sacrificing everything to mammon. But this righteous uprising in defense of God's trees in the midst of exciting politics and wars is telling a different story, and every Sequoia,

*Found among Muir's papers after his death and now published for the first time. See editorial, page 87.—EDITORS.

I fancy, has heard the good news and is waving its branches for joy. The wrongs done to trees, wrongs of every sort, are done in the darkness of ignorance and unbelief, for when light comes the heart of the people is always right. Forty-seven years ago one of these Calaveras King Sequoias was laboriously cut down, that the stump might be had for a dancing-floor. Another, one of the finest in the grove, more than three hundred feet high, was skinned alive to a height of one hundred and sixteen feet from the ground and the bark sent to London to show how fine and big that Calaveras tree was—as sensible a scheme as skinning our great men would be to prove their greatness. This grand tree is of course dead, a ghastly disfigured ruin, but it still stands erect and holds forth its majestic arms as if alive and saying, "Forgive them; they know not what they do." Now some millmen want to cut all the Calaveras trees into lumber and money. But we have found a better use for them. No doubt these trees would make good lumber after passing through a sawmill, as George Washington after passing through the hands of a French cook would have made good food. But both for Washington and the tree that bears his name higher uses have been found.

Could one of these Sequoia kings come to town in all its god-like majesty so as to be strikingly seen and allowed to plead its own cause, there would never again be any lack of defenders. And the same may be said of all the other Sequoia groves and forests of the Sierra with their companions and the noble *Sequoia sempervirens*, or redwood, of the coast mountains.

In a general view we find that the *Sequoia gigantea*, or Big Tree, is distributed in a widely interrupted belt along the west flank of the Sierra, from a small grove on the middle fork of the American River to the head of Deer Creek, a distance of about two hundred and sixty miles, at an elevation of about five thousand to a little over eight thousand feet above the sea. From the American River grove to the forest on Kings River the species occurs only in comparatively small isolated patches or groves so sparsely distributed along the belt that three of the gaps in it are from forty to sixty miles wide. From Kings River southward the Sequoia is not restricted to mere groves, but extends across the broad rugged basins of the Kaweah and Tule

rivers in majestic forests a distance of nearly seventy miles, the continuity of this portion of the belt being but slightly broken save by the deep cañons.

In these noble groves and forests to the southward of the Calaveras Grove the axe and saw have long been busy, and thousands of the finest Sequoias have been felled, blasted into manageable dimensions, and sawed into lumber by methods destructive almost beyond belief, while fires have spread still wider and more lamentable ruin. In the course of my explorations twenty-five years ago, I found five sawmills located on or near the lower margin of the Sequoia belt, all of which were cutting more or less Big Tree lumber, which looks like the redwood of the coast, and was sold as redwood. One of the smallest of these mills in the season of 1874 sawed two million feet of Sequoia lumber. Since that time other mills have been built among the Sequoias, notably the large ones on Kings River and the head of the Fresno. The destruction of these grand trees is still going on.

On the other hand, the Calaveras Grove for forty years has been faithfully protected by Mr. Sperry, and with the exception of the two trees mentioned above is still in primeval beauty. The Tuolumne and Merced groves near Yosemite, the Dinky Creek grove, those of the General Grant National Park and the Sequoia National Park, with several outstanding groves that are nameless on the Kings, Kaweah, and Tule river basins, and included in the Sierra forest reservation, have of late years been partially protected by the Federal Government; while the well-known Mariposa Grove has long been guarded by the State.

For the thousands of acres of Sequoia forest outside of the reservation and national parks, and in the hands of lumbermen, no help is in sight. Probably more than three times as many Sequoias as are contained in the whole Calaveras Grove have been cut into lumber every year for the last twenty-six years without let or hindrance, and with scarce a word of protest on the part of the public, while at the first whisper of the bonding of the Calaveras Grove to lumbermen most everybody rose in alarm. This righteous and lively indignation on the part of Californians after the long period of deathlike apathy, in which

they have witnessed the destruction of other groves unmoved, seems strange until the rapid growth that right public opinion has made during the last few years is considered and the peculiar interest that attaches to the Calaveras giants. They were the first discovered and are best known. Thousands of travelers from every country have come to pay them tribute of admiration and praise, their reputation is world-wide, and the names of great men have long been associated with them—Washington, Humboldt, Torrey and Gray, Sir Joseph Hooker, and others. These kings of the forest, the noblest of a noble race, rightly belong to the world, but as they are in California we cannot escape responsibility as their guardians. Fortunately the American people are equal to this trust, or any other that may arise, as soon as they see it and understand it.

Any fool can destroy trees. They cannot defend themselves or run away. And few destroyers of trees ever plant any; nor can planting avail much toward restoring our grand aboriginal giants. It took more than three thousand years to make some of the oldest of the Sequoias, trees that are still standing in perfect strength and beauty, waving and singing in the mighty forests of the Sierra. Through all the eventful centuries since Christ's time, and long before that, God has cared for these trees, saved them from drought, disease, avalanches, and a thousand storms; but he cannot save them from sawmills and fools; this is left to the American people. The news from Washington is encouraging. On March third [1905?] the House passed a bill providing for the Government acquisition of the Calaveras giants. The danger these Sequoias have been in will do good far beyond the boundaries of the Calaveras Grove, in saving other groves and forests, and quickening interest in forest affairs in general. While the iron of public sentiment is hot let us strike hard. In particular, a reservation or national park of the only other species of Sequoia, the *sempervirens*, or redwood, hardly less wonderful than the *gigantea*, should be quickly secured. It will have to be acquired by gift or purchase, for the Government has sold every section of the entire redwood belt from the Oregon boundary to below Santa Cruz.



MARGIN OF THE REDWOOD FOREST
Photo by U. S. Forest Service



ONCE GONE. NOT TO BE RESTORED IN OUR TIME
Photo by California State Forester

PROGRESS IN THE NATIONAL PARKS

BY STEPHEN T. MATHER, DIRECTOR OF NATIONAL PARKS

THE Sierra Club has been so closely identified with the national park development that I am particularly glad to avail myself of the opportunity to present to its members an account of the past year's progress and a survey of some of the more pressing problems that confront us. In doing so I shall confine myself to matters that involve the National Park Service as a whole and those parks that lie nearest to the membership of the club. A more complete discussion of these matters, as well as those concerning the other parks and national monuments, will be found in the annual report of the Director of the National Park Service for the year 1919.

The past season was remarkable for the large increase in travel to the national parks. The total number of visitors to all parks during the past three years was as follows:

1917—Previous record year . . .	488,268
1918—Decrease due to war conditions .	451,691
1919—	756,027

This sudden increase taxed the accommodations and the administrative capacities to the utmost. Every effort was made by the National Park Service to meet the varied demands, but in some instances the facilities at its disposal were entirely inadequate. The result of last year's travel shows very clearly the pressing need for larger appropriations to provide such imperative necessities as new roads, improved roads, trails, bridges, public camping facilities, water supply and sewerage systems, and the expansion of supervision and service.

Although the travel was varied in character and an astonishing increase appeared in every mode, the most remarkable increase was in the number of private automobiles entering the parks. In 1917 and 1918 there were approximately fifty-five thousand cars a year, whereas in 1919 there were over one

hundred thousand. The influence of this travel is already being felt in the growing demand for a park-to-park highway system. It is to be hoped that this demand will result in securing the co-operation of local, state, and national agencies in a comprehensive broad-guage extension and paving program.

One obvious lesson from the past season is that the more remote sections of the parks must be rendered accessible by trails and public camps. This is illustrated particularly in Yosemite, where some outlet must be found for the ever-increasing throngs in the valley. It is the aim of the National Park Service to assist in every way the campers who bring their own equipment and the travelers who desire modest accommodations away from the general centers.

Three new national parks were established during 1919. The Grand Cañon of the Colorado, in Arizona, which has been a national monument since 1908, administered by the Department of Agriculture, has at last been made a national park. The bill was signed by the President on February 26, 1919. It is proposed to hold dedication ceremonies early this spring. On the same day a bill was signed creating the Lafayette National Park on Mount Desert Island, in the State of Maine. This is our first national park east of the Mississippi. Since 1916 it has been administered as the Sieur de Monts National Monument. The third new park is Zion National Park, in Utah, embracing the wonderful Zion Cañon, which has been a national monument since 1909. The creation of these three parks constitutes an important step in the rounding out of a comprehensive park system adequate for the recreational and educational needs of the nation.

Other steps are in contemplation. Of the many suggestions for additions to the system, certain ones stand out as pre-eminently desirable. Foremost is the proposed Roosevelt National Park in California. The Phelan bill, designed to create this park, was passed by the Senate a year ago, but its counterpart in the House of Representatives, the Elston bill, was held in committee, so that the matter died with the expiring Congress. New bills following the same lines have been introduced in both houses during the current session, and, with the continued support of such public-spirited organizations as the Sierra

Club, the present year should see a successful fruition of the project to include the regions of the Kern and Kings River cañons in a great national park. Another project of almost equal importance is the extension of the Yellowstone National Park to include the Jackson Hole country and the Teton Mountains. The boundaries of Crater Lake, Mount Rainier, and Rocky Mountain national parks also need extension, in order to meet more fully the needs of the public. The Sierra Club should be particularly interested in solving the problem as to what should be done to preserve some typical tracts of the California coast redwoods from the very rapid destruction that is now going on. A resolution has been introduced in Congress asking for an investigation to determine whether some such tract should be set aside as a national park.

The year's activities in Yosemite National Park, while greater than ever before, must be considered as but indications of those to come. Thronged with thousands of happy vacationists from late spring to the end of the summer season, Yosemite has attained a new record of usefulness in the life of the nation. Vastly more people toured the park this year than ever before, and it is especially worthy of note that the upper reaches of this great scenic playground were more popular with visitors this year than during any past season. This broader understanding and appreciation of the park became general even faster than we had dared to hope, so that funds must be provided immediately by the Federal Government for extensive development of roads and trails and sanitation systems, while the enterprises engaged in furnishing accommodations of various kinds must enlarge their establishments and better prepare to meet the ever-increasing demand for every type of service.

I had the pleasure of visiting the Sierra Club members during their outing at Tuolumne Soda Springs last summer and renewed my realization of the good that these outings are doing, not only on account of the enjoyment of the members, but in spreading far and wide information about the wonders of the high mountain regions of the parks. I camped for several days in the Tuolumne Meadows with members of my family, and passed that way again a little later with a group of friends,

who were one and all impressed with the ideal character of this region for summer camping.

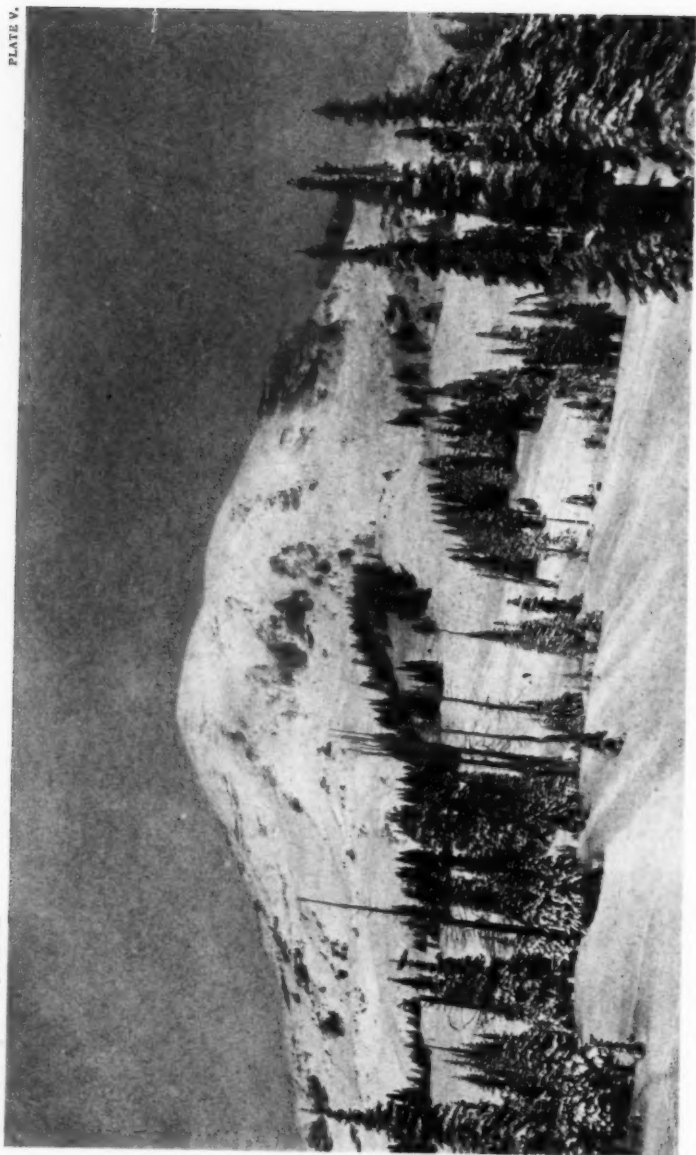
The problem of developing the hotel accommodations in Yosemite has long been a perplexing one. It has been beset with innumerable difficulties perhaps not always comprehended by the casual visitor. At length the situation seems to have been met upon the broad scale that alone can solve the problem. The Yosemite National Park Company, composed of far-seeing business men of San Francisco and Los Angeles, are preparing to go ahead with improvements involving an aggregate expenditure of \$1,500,000. This includes the construction of the new hotel on the floor of Yosemite Valley, the building of a new Camp Yosemite, installation of sanitary and water-supply systems at Glacier Point Hotel, and in general complete provision for all conditions of travel. At Camp Curry, operated by the Curry Camping Company, a group of very attractive bungalows has been completed and other steps are being taken to meet the demands of its ever-increasing patronage.

Yosemite is a winter as well as a summer resort. That it has not been more patronized during the winter months is due partly to limited accommodations and partly to lack of publicity. The plans for the new hotel give due consideration to its use as a winter resort, and there is every reason to suppose that in the future the fame of Yosemite in its garb of snow and ice will spread throughout the world. Contemporaneously with the building of the hotel there will be under construction by the State of California a new highway from Merced by way of Mariposa and the cañon of the Merced River, connecting at El Portal with the existing road into the valley. When this road is paved out of a fund already started by public subscription there will be a splendid highway with uniform grade open all the year round. In anticipation of this, the Park Service has already reggraded and widened its road from the valley to the boundary of the park near El Portal and is asking Congress this year for an appropriation for paving. Another important step in the development of Yosemite as a winter resort has been suggested by Mr. William E. Colby of the Sierra Club in the form of a shaft inside of the cliff extending from the floor of the valley to Glacier Point. This is apparently an entirely prac-



PLATE IV.

A FAMILY GROVE OF REDWOODS
Photo by California State Forester



MOUNT RAINIER IN WINTER

Photo by Rodney L. Glisan

tical scheme, and if put into effect will make it possible to keep open the Glacier Point Hotel all the year round and give incomparable opportunities for snow sports.

Of special interest to the Sierra Club is the trail development throughout the parks. I have been greatly aided by the valuable suggestions of members of the club in planning trail routes. Anticipating a much greater use of the trails each season, we began this year the development of the Grand Cañon of the Tuolumne River. A trail is now being built from Harden Lake to Pate Valley, and it is proposed to continue this next year, if funds are available, up Piute Creek to join the Pleasant Valley Trail on the north side of the cañon. Also it is proposed to continue to Pate Valley the trail which now reaches the Water-wheel Falls from Tuolumne Meadows.

Fishing is one of the attractions of Yosemite National Park, and a greater number enjoyed this sport last season than ever before. Foreseeing the need of planting young fish in order to provide for the continuance of this sport, and for the purpose of propagating fish for the general use of the State, an agreement was entered into between the National Park Service and the State of California for the construction of a fish hatchery at Happy Isles, at an expenditure of about \$17,000. Water was to be furnished from the intake of the old power plant, and all plans had been completed by the State Architect and the State Fish and Game Commission, when the matter was held up by the State Board of Control and the Governor. A temporary hatchery was in operation last summer and met with marked success; but even that has now been dismantled by orders of the Governor, and the entire plan has been subjected to a delay that will for the present curtail the sport of fishing in the park.

A very useful contribution to the park was made this year by the donation, through the Sierra Club, of a protection for the trail to the top of Half Dome. This was installed early in July and was used by many climbers, who appreciated the opportunity of seeing in safety the wonderful view, with its sheer drop of practically five thousand feet to the valley below.

A notable event in the educational use of the parks was the series of Le Conte Memorial Lectures delivered in Yosemite

Valley last summer under the direction of the Extension Division of the University of California. Four series were given —by Willis L. Jepson, on plants and trees of Yosemite; by William Frederic Badè, on John Muir; by François E. Matthes, on geological features of the valley; and by A. L. Kroeber, on the Indians of the Yosemite. The establishment of these lectures as a park institution to continue indefinitely is a source of keenest delight and satisfaction to me. Our thanks are also due the University of California for other courtesies extended, not the least of which is the undertaking of a comprehensive study of the animal life of the park under direction of Dr. Grinnell of the Department of Zoology. The results of Dr. Grinnell's work will probably be published this year, and will be a distinctly valuable addition to the literature of the parks.

In Sequoia National Park the future depends so much on the outcome of the enlargement project that there has been a delay in planning any extensive improvements, and we have contented ourselves with maintaining the existing roads, trails, and other utilities of the park in proper condition for public use. For the same reason no serious attempt has been made to extend the facilities of the various business interests. In fact, when the larger development of the existing park is made in connection with the territory adjacent, the scale of operation of these interests must be so tremendously expanded that a general readjustment of all concessions may be necessary in order to provide adequate service for the touring public. The sentiment in favor of the enlargement project seems to have become more pronounced during the past year, and there is every reason to believe that the year 1920 will see the fulfillment of the plan first voiced as long ago as 1891, when John Muir advocated, in an article in the *Century Magazine*, the extension of Sequoia Park to include the Kings River region.

Crystal Cave, discovered in 1918 within the boundaries of the present Sequoia National Park, has been closed to the public during the past year on account of the tendency to vandalism manifested the year before. The cave can be maintained unimpaired only by the installation of a proper lighting system and by the employment of guides to conduct parties through its various passages and to prevent depredations on its formations.

It is hoped that means will be provided for this in the near future.

General Grant National Park depends for its development, in much the same way as Sequoia, upon the outcome of the Roosevelt National Park project. It lies upon one of the natural roads of access to the Kings Cañon and will be one of the principal gateways to the larger park. During the past season it has been exceedingly popular and has been the summer home of many families from the San Joaquin Valley.

The year has been a busy one in all the other national parks, but to adequately present their stories would require many pages. So for the benefit of those who are interested in them I can merely refer once more to my annual report to the Secretary of the Interior.

The members of the National Park Service have so many personal friends among the membership of the Sierra Club that before concluding these remarks I would like to mention certain changes in the personnel of the Service. On June 10, 1919, Horace M. Albright, who was assistant director of the National Park Service from its inception, and who is himself a member of the Sierra Club, was appointed superintendent of Yellowstone National Park. He was succeeded as assistant director by Arno B. Cammerer, formerly assistant secretary of the National Fine Arts Commission. Robert Sterling Yard, chief of the Educational Division of the Service, resigned on June 30, 1919, to become executive secretary of the newly organized National Parks Association. D. L. Raeburn, superintendent of Mount Rainier National Park, was granted indefinite leave of absence on April 16, 1919, and on May 10th Major Roger W. Toll was appointed to fill the vacancy. William H. Peters, assistant engineer, was designated as acting superintendent of Grand Cañon National Park on August 2, 1919.

In conclusion permit me to summarize some of the more pressing requirements of the Service and the various parks and to bespeak from the Sierra Club a continuance of its valued interest and assistance:

1. An increase in the personnel of the Washington office of the Service, and a general expansion of the bureau in other di-

rections made necessary by the enormous increase in its activities.

2. The enlargement of Yellowstone National Park to include the Teton Mountains, the headwaters of the Yellowstone River, and other lands south of the park.

3. The extension of Sequoia National Park northward and eastward, and the dedication of this area as the Roosevelt National Park in memory of the late President.

4. The extension of Crater Lake National Park to include the Diamond Lake region immediately north of the park.

5. The addition of the Mount Evans region west of Denver to Rocky Mountain National Park.

6. The changing of the south boundary of the Mount Rainier National Park to make Ohanepecosh Hot Springs a part of the park.

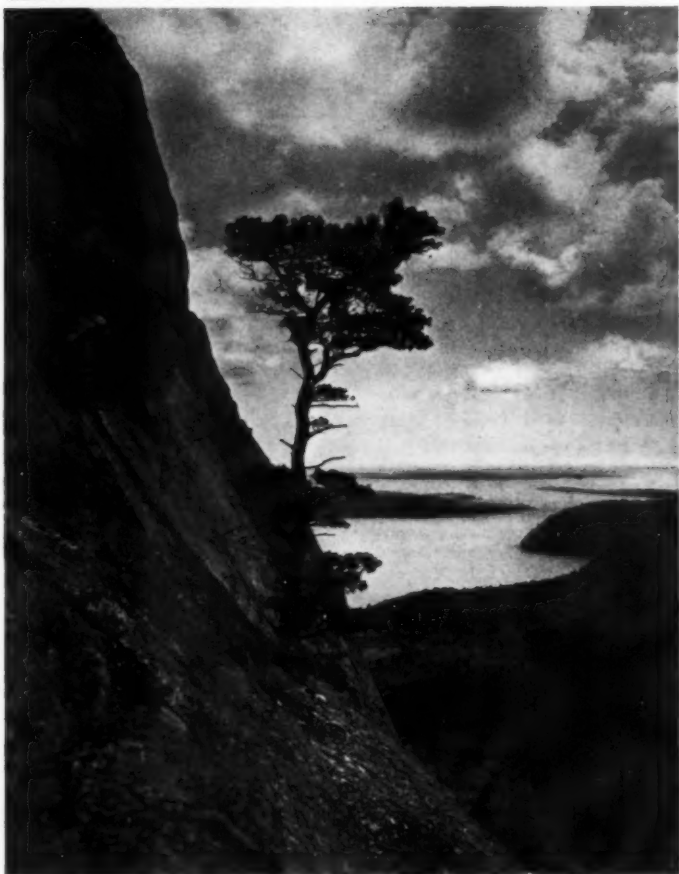
7. The acceptance by Congress of jurisdiction over Yosemite, Sequoia, and General Grant national parks tendered by recent act of the legislature of California.

8. The appropriation of funds for establishing a protective force of rangers in Mount McKinley and Lassen volcanic national parks.

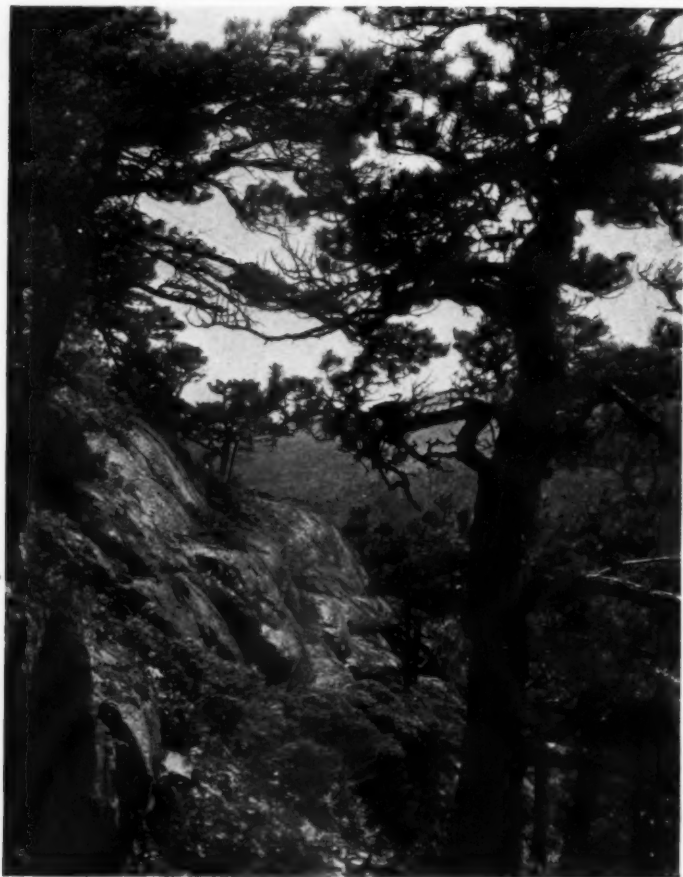
9. The adoption by Congress of a comprehensive road-building program for the national parks, with commitments as to appropriations for the period of years required to carry out the program.

10. Safeguarding of trees along highways in and leading to several national parks, and along interpark roads, with especial attention to the preservation of trees along roads in or approaching Yosemite, Glacier, and Mount Rainier parks, where the timber has passed from the Federal Government into private hands.

11. The establishment of a national touring division in the National Park Service, with power to work in co-operation with the railroads, automobile associations, highway organizations, commercial and travel clubs, etc., in the encouragement of travel in this country.



THE HARBOR OF MOUNT DESERT FROM ACADIA MOUNTAIN,
LAFAYETTE NATIONAL PARK



THE PINES AND CLIFFS OF MOUNT DESERT,
LAFAYETTE NATIONAL PARK

12. A continuance of the effective aid of the Bureau of Service, National Parks and Monuments, established by the United States Railroad Administration, after the railroads of the nation are returned to their owners.

13. The creation of game preserves adjacent to several national parks, notably Yosemite, Crater Lake, and Mount Rainier parks, in order that better protection may be given to wild animals when they are driven from the parks by snow.

MOUNT SHASTA

BY JOHN ROLLIN RIDGE*

ITSELF all light, save when some loftiest cloud
Doth for a while embrace its cold forbidding
Form, the monarch mountain casts its mighty
Shadow down upon the crownless peaks below,
That, like inferior minds to some great
Spirit, stand in strong contrasted littleness!
All through the long and summery months of our
Most tranquil year, it points its icy shaft
On high, to catch the dazzling beams that fall
In showers of splendor round the crystal cone,
And roll in floods of far magnificence
Away from that lone, vast reflector in
The dome of Heaven.

*The author, born March 19, 1827, the son of a full-blooded Cherokee chief, died at Grass Valley, California, October 5, 1867. His Indian name, Cheesqualawny, means Yellow Bird, and under this pen-name he made his contributions to early California literature.

THE SIERRA CLUB OUTING OF 1919

BY CHARLES A. NOBLE

THE 1919 summer outing of the Sierra Club in Tuolumne Meadows was, in some respects, a duplicate of the club's preceding trip in 1917—the official outing of 1918 was omitted because of the war—but the region visited is so big and attractive, and so centrally located for side-trips of great number and variety, that it would require many duplications to give one person familiarity with it, and no mountain-lover would ever feel that he had exhausted its charms.

The outing party, about one hundred and seventy-five, reached Yosemite Valley July 12th, shortly after midday, via Merced and El Portal, and remained there until the morning of the 14th. The camp, selected well up in Tenaya Cañon to facilitate the climb out of the valley, was less comfortable than the former one, near the Stoneman bridge, and less convenient for valley excursions; but to a Sierran bound for the high mountains the human noise and dust of Yosemite seem desecration of primitive nature; so that the wait-over of twenty-four hours in this anomaly of automobiles and silks he regards, at best, merely as a necessary evil.

An early start enabled the party to make the tedious zig-zags of the Tenaya trail in shadow, after which the route to Lake Tenaya lay through fine forests and beautiful meadows, with repaying views into the rugged Tenaya Cañon. After a night in camp, at the mouth of Murphy's Creek, followed by a tramp of eight miles along the Tioga Road, the party settled in permanent camp on its private estate at Soda Springs for a stay of eighteen days.

For persons of all degrees of physical vigor Tuolumne Meadows is an inviting camping-place. The altitude of 8500 feet insures invigorating mountain air; the skyline to the east, south, and west follows a succession of mountains which, at all times of day, in sunshine and storm, but especially in the morning and evening colors, are of unfailing beauty. The less hardy

find ample pleasure in short excursions to the many lakes within a radius of a few miles. In these, and in the near-by streams, the fishing is good. For the more enterprising, there are endless possibilities for side-trips in all directions, into country whose beauty and ruggedness are surpassed in but few parts of the Sierra.

The accessibility of the Meadows by automobile is an advantage or disadvantage, according to one's point of view. A routing of forty automobiles a day past the park checking-station, reported by the forest ranger, indicates this year's volume of travel. During the club's stay at the Springs the Tuolumne River banks were dotted with auto camps, which extended far up Dana Fork and were beginning to creep up Lyell Fork. One's first impulse is to resent this intrusion into Nature's heart, intimacy with which, one instinctively feels, should be reserved for those who can achieve it by physical endeavor. Upon reflection, however, one can but rejoice when increasing numbers of one's fellow-men find healthful pleasure in Nature's gifts. And there are still remoter and less accessible parts of the mountains in abundance for those sufficiently hardy to reach them.

The rapidly increasing use of the Meadows by campers has, however, a serious side for the Sierra Club, in that the commissary's water supply is threatened with pollution. The management gave attention to this question last summer, and determined that it would be practicable, at moderate expense, to pipe a supply from Delaney Creek. This would not only be a wise protective measure, but it would, by distributing water through the camp, add materially to the convenience of those whose sleeping apartments are now a quarter of a mile from the river.

The club was no sooner settled for its two weeks' stay at Soda Springs than expectation began to rise concerning the big side-trip, the six-day excursion to Ritter and the Devil's Postpile. In preparation for this, as a muscle-hardener, Mr. Colby led a considerable group on July 17th over the Sunrise Trail to Cathedral Lake, a gem snugly set in a granite bench overlooking Tenaya Lake far below to the west. After the men and women had separated for a swim and reunited for lunch, the

return was made, skirting Cathedral Peak on its south side, past Budd Lake, across cañons and hogbacks, a diversified route, selected, some thought, with a view to trying out the numerous aspirants for the longer trip that was to begin the following day. Below the shoulder of Unicorn Peak we passed unusually fine masses of cassiope, the exquisite Sierra heather, which was to greet us at so many high points in the days ahead. At the evening camp-fire, Mr. Mather, Federal Director of the National Park Service, addressed the club on plans that were maturing to save, for park purposes, some of the superb redwoods of Humboldt County.

The following day, July 18th, about ninety club members, with pack-train and commissary, started up Lyell Fork for the big side-trip. The weather was kind to us during this, as during all the other excursions of this season's outing. The only considerable storm of the month occurred during this week; but its area was considerably restricted to the Meadows, where the unprotected could, if necessary, seek shelter in Parsons Lodge. The first night was spent at the Lyell base-camp, below Donohue Pass. Those of the party who had hoped to climb Mount Lyell from this point were obliged to forego that pleasure in order that the return to Soda Springs might, without crowding, be made in six days, in time to welcome there Mr. Mather and a party of distinguished men whom he was interesting in the needs of the Park Service.

The second leg of our journey took us over Donohue Pass and across Rush Creek to a stunning camp on the north shore of Thousand Island Lake, immediately under the towering mass of Banner, with a glorious outlook over the beautiful lake toward the impressive Volcanic Ridge at the south. Here the selected few who were to climb Ritter the next day foregathered at the council-seat and openly arrived at the covenants which should control the morrow's ascent. The remainder made selection from the various possible routes leading to our next camp in Agnew Meadows, and formed groups accordingly for the departure in the morning. The group which the writer joined chose the route leading down Shadow Creek. We crossed the ridges, first into the Garnet Lake, then into the Shadow Creek basin, keeping high up. As we skirted the east



PLATE VIII.

BANNER PEAK FROM THOUSAND ISLAND LAKE
Photo by William E. Cully



GARNET LAKE.
Photo by Philip S. Carlton

wall of Ritter we had to look up forty-five degrees to see the top of that huge mass, so steep was the face. Following our desire to see something of the headwaters of Shadow Creek, we climbed to a small lake snuggled at the foot of a little glacier of the Minarets, a gem of sapphire blue, whose only admirer until we arrived appeared to be a solitary gull. Descending the cañon, we passed Edisa Lake and gave willing testimony to the report that it afforded the best view of Ritter and Banner. From this point an excellent new trail, not on the map, led to Agnew Meadows. Never have I seen such a variety and abundance of mountain flowers, nor traversed a finer cañon than we enjoyed this day. We lunched on Shadow Lake, also a beautiful body of water, hemmed in by high austere slopes, down the depressions of which forests of hemlock and mountain pine spread caressingly. The trail descended rapidly to the San Joaquin, so that in a short time we passed from albicaulis to juniper, aspen, and manzanita.

We found the main body encamped in a fine grove of firs on the edge of the beflowered Agnew Meadows. The Ritter climbers came in to a late dinner, weary of body but fresh in spirit after a hard climb and a long hike.

Two nights in Agnew Meadows permitted a variety of pleasures, not the least of which were fir-bough beds. The intervening day was devoted to a jaunt down-stream to the Devil's Postpile, a striking outcropping of basalt prisms, suggesting, when viewed from the side, a giant honeycomb fifty or more feet thick, and exposing on the glaciated top that same giant's parquet floor; to Rainbow Falls in the Middle Fork of the San Joaquin, resembling Vernal Falls in appearance and volume, if not in height; to Reds Meadows, and Hot Sulphur Springs, where the warm water gushes from a rich meadow and flows away in a goodly flower-banked stream; to Sotcher Lake, where a threatening shower hastened a well-earned swim; through long stretches of volcanic ash; and finally back to Agnew Meadows, a paradise of flowers, breast-high with lilies, lupines, and delphiniums, in patches as large as a dining-table.

Early on July 22d, our fourth day out, the entire party climbed to Agnew Pass, moving most of the time either through flower-carpeted forest, or above timber-line, along a sloping

shelf bountifully covered with a great variety of flowers and shrubs, with a magnificent view to the west, across the cañon, upon the impressive sweep of the Ritter group; and to the south, upon the tangle of mountains that formed the watershed of the Middle Fork of the San Joaquin. I have seen no finer view in the Sierra. Bidding farewell to this splendid region, we descended to Rush Creek, made a slight detour to obtain a closer view of Gem Lake, and rose to Gem Pass, where, from a near-by eminence, the outlook to the east over Mono Lake expanded into a fine panorama. At Alger Lake (10,500 feet) the party spent the fifth night. Here, in the wake of a band of sheep, one had a suggestion of the offensive conditions that obtained quite generally in the grassy regions of the Sierra years ago, before unrestricted grazing was abolished. Alger Lake was bleak and windy; the provisions were running low; small clumps of stunted *albicaulis* offered the only sheltered sleeping-places; but such slight discomforts did not ruffle the spirits of the group. The camp-fire was just as enjoyable and the camp-songs and jests had the customary healthy tone.

The sixth day took us over Koip Ridge, through Parker Pass and past Mono Pass, with fine outlooks down the eastern slope of the Sierra over the colorful Mono desert, and back to Soda Springs, by way of the Dana Meadows. It had been a superb experience, with no untoward incident to mar its enjoyment.

Another side-trip, second in interest only to the "big trip," was a two-day excursion to Mount Conness. The party left Soda Springs on Friday, July 25th, and made camp at the larger of the Young Lakes, picturesquely set on a glacial bench under the north slope of Ragged Peak. The Chinese cooks having missed their way, the chairman of the club's outing committee, who led the party, gave new concrete evidence of his mountain craft by stepping into the breach and preparing, with the assistance of willing hands, a most enjoyable dinner for ninety critical Sierrans. The stew was pronounced worthy of special mention. The waning sunlight on Conness to the north, and the twilight colors on the cliffs about the lake were wonderful. At the camp-fire, Mr. Matthes, of the Geological Survey, gave an illuminating talk on glacial cirques, motivated

and illustrated by the position of the lake before us. The ascent of Conness was made without difficulty. The stone shelters, near the summit, and the hut on the top, housing the concrete monument, gave evidence of the labor of past years when this peak was used as a triangulation station. From Dunderberg at the north, around by Tower Peak, past the Yosemite and Lyell groups, to the Dana group at the east, the panorama was a feast. The party returned in groups by different routes. A few of us descended through a notch to the east and made our way to Saddlebag Lakes. Here a hydro-electric dam was under construction by the same company that is now utilizing the water at Gem Lake to carry current to Tonopah and San Bernardino. Although power was not yet available from Saddlebag Lakes, the company's cookhouse was able to supply us with energy in the form of delectable prune pies.

During the interval between the Conness trip and the breaking up of the permanent camp at Soda Springs, three one-day trips were made—one to lakes Evelyn and Ireland, a second to Echo and Cathedral lakes, and a third to the Gaylor Lakes, northeast of Moraine Flat, including a visit to the well-preserved stone house, erected many years ago on a timberless ridge to shelter the workers of the ill-fated Tioga mine.

The club broke permanent camp at the Springs August 2nd and moved to Ten Lakes Basin. A part went down the Tioga Road to Yosemite Creek, thence eight miles along the new trail to the basin; the remainder formed in squads of about ten each and knapsacked down the Tuolumne as far as Waterwheel Falls, then across country. My squad, under the leadership of Mr. Huber, started a day ahead of the rest, and spent two nights out, instead of one. It was an arduous but an exhilarating experience. The men carried thirty, the women fifteen pounds. Our first day ended in a cozy nook on the glaciated bench at the head of the falls, surrounded by the grand Tuolumne River walls, except to the west, where the outlook over the falls down the cañon was superb. The fishing at the Glen Aulin pool, and especially at our camping-place, had been excellent—each angler had taken his limit. At this point one was, in an air-line, but four miles from Ten Lakes Basin, but no trail and much scrambling lay between. The climb over

into Cathedral Creek Cañon took us through a parklike pass; the descent into and down this cañon, where the second camp was made, was for loaded backs somewhat rough. The route lay up the south fork of Cathedral Creek, but as the fork was almost dry and the slope down which it entered Cathedral was much steeper than it appeared on the map, we were misled into retracing our steps before rising out of Cathedral Cañon, which imposed upon us the penalty of having to surmount one extra, perfectly good ridge, a fate that also befell some, if not all, of the other squads. The approach to the basin over its eastern wall affords a fine outlook, including Dana and Conness to the east, Colby Ridge to the west, and the basin itself, a network of minor ridges and hemlock forests. Descending into the basin we passed lake after lake, all of them gems, but differing in their beauty from any of those previously seen, softer in setting, due perhaps to the velvety hemlock forests which reached down the slopes to the water's edge. The club made its camp at the southern end of the largest lake, a charming spot that was to be home for the few remaining days of the outing.

No account of the 1919 outing should omit to record either the absence of Mr. Tappaan, whose unselfish devotion and never-failing resourcefulness have always meant so much for the morale of camp-life, or the unflagging energy, good judgment, and generous spirit with which Mr. Colby acquitted himself of two tasks—the one, that of guiding the myriad details incident to bringing the outing into being and making it run smoothly in the field; the other, the burden usually carried by Mr. Tappaan.



PLATE X.

TEN LAKE BASIN
Photo by Walter L. Huber



ECHO PEAK, AND, BEYOND, COCKSCOMB CREST
Both rising above ice-swept and rounded mountains
Photo by F. E. Matthes

COCKSCOMB CREST*

By FRANÇOIS EMILE MATTHES



FAMILIAR to all who have visited the Tuolumne Meadows, and transcending perhaps all other mountain groups overlooking that campers' paradise in spectacular beauty and monumental dignity, are the pinnacled and spired peaks of Unicorn, Echo, and Cathedral. Each has its own individuality, striking and unforgettable, each is wholly different from the others, yet all are notably alike in one respect: their frail minarets and splintered crests stand planted upon full-bodied mountains of great bulk, all rising to approximately the same height; they seem like delicate superstructures, specially added for the sake of ornamentation. Indeed, they recall the slender turrets and spires on certain ponderous cathedrals of Old Europe.

The significance of this peculiar style of mountain architecture, which is not prevalent in the Sierra Nevada, has been hinted at by more than one writer. Muir and Chase both have suggested that the sharp pinnacles and crests may be summits that were never overridden by the ice of the Glacial Epoch; that stood out above even the highest ice-floods and escaped being planed down and rounded off as were the massive shoulders of the mountain pedestals under them. This explanation, though only conjectural, was eminently reasonable, and it is a genuine satisfaction, now that the region has been submitted to a systematic and detailed study, to be able to confirm its correctness and to corroborate with positive and abundant evidence the surmise of these two keen observers.

However, the matter is not so simple as it at first may seem. In Muir's day glacial science was in its infancy, and no man had as yet that perspective of the succession of ice-ages and intervening epochs of milder climate which the world-wide research of the last two decades has made known to us. To Muir and his contemporaries the Glacial Epoch still seemed a single, uninterrupted cycle of glacial conditions that slowly

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reached a climax, like an oncoming tide, and then slowly waned, the glaciers making many repeated but progressively feebler re-advances, like the waves of an outgoing tide. Today we know that the Glacial Epoch, so-called, really consisted of several prolonged ice-tides separated by equally prolonged intervals, during each of which the continental ice-sheet and the lesser ice-bodies on our western mountain ranges shrank back to their sources and perhaps vanished altogether.

In the Sierra Nevada indications of at least two great ice-floods have been clearly recognized by several observers—two ice-floods that occurred manifestly at widely different times, the later culminating probably only twenty thousand years ago, the earlier, perhaps as much as several hundred thousand years ago. The evidence is the more readily established as the later ice-flood was the smaller and less extensive of the two and left undisturbed the moraines—that is, the ridges of ice-carried rock *débris*—that mark the limits of the earlier ice-flood. In no part of the Sierra Nevada have these facts been ascertained with more precision than in the Yosemite region and the High Sierra immediately above it. Thus it is now definitely known that the later ice-flood invaded the Yosemite Valley only as far as the Bridal Veil Meadows, whereas the earlier ice-flood advanced eleven miles farther down the Merced Cañon, coming to a halt a short distance beyond El Portal.

It will be clear from this that there must be from the Bridal Veil Meadows upward throughout the Yosemite region and adjoining the High Sierra not one but two "ice-lines," each marking the culmination of an ice-flood. The pursuit of these two ice-lines up towards the crest of the range was, indeed, for the better part of two seasons the writer's most engrossing occupation. He traced them in detail and mapped them along the length of the Yosemite, up through the Little Yosemite and the upper Merced Basin and all its tributary cañons, and also up through Tenaya Cañon and the great Tuolumne Basin and its tributary cañons. The result, it may be said, was to him, as glacialist, a genuine surprise. The two ice-lines, which in the lower Yosemite lie several thousand feet apart in altitude, were found to approach each other as they ascend the range and ultimately to coalesce at its crest. One might reasonably have

expected the extensive and deep ice-fields and glaciers of the earlier epoch to have come from a Sierra crest completely domed over with smoothly sloping, unbroken snow-fields, and the relatively modest ice-streams of the later epoch to have flowed forth from cirques filled only to moderate depth, and partitioned from one another by bare rock crests and "arrêtes" rising high above the ice; but, curiously, it appears that the snow conditions along the Sierra crest were substantially the same in both epochs. *The snows that fed the vast glaciers of the earlier epoch filled the summit cirques to no greater depth than did the snows that formed the smaller glaciers of the later epoch.* The significance of this remarkable coincidence need not be here discussed—it would lead too far afield; suffice it for our purpose that the fact has been established.

A few figures will help to give more definiteness to one's conception of the relation of the two ice-lines. The later Yosemite Glacier ended at the Bridal Veil Meadows at an altitude of 3900 feet, but the lateral moraines left by the earlier ice-stream on either side of the Yosemite chasm lie 2700 feet above this spot. At the head of the valley the later glacier attained a depth of about 1500 feet, but the lateral moraines of the earlier glacier still lie 2400 feet higher. Within the next few miles the two ice-lines converge with remarkable rapidity. In the Little Yosemite, for instance, they are only 600 feet apart. There the later ice rose within 100 feet of the top of Moraine Dome, but the earlier ice passed over it with a depth of over 500 feet. Opposite Lake Merced the difference in altitude between the two ice-lines dwindles to 400 feet, and thence upward, to the ultimate source of the glacier under Mount Lyell, the difference steadily decreases until it becomes a vanishing quantity.

Following the ice-lines up through Tenaya Cañon, they are found to be 2100 feet apart in altitude opposite Half Dome. That rock monument was engulfed by the earlier ice up to within 700 feet of its summit, but even the foot of its great cliff rose 800 feet above the surface of the later glacier. At the head of Tenaya Cañon the earlier ice rose only 900 feet higher than the later ice, and still farther up, on the divide between the Tenaya and Tuolumne basins, the two ice-lines are only 400

feet apart. In the great upper Tuolumne Basin, which held an ice-field embracing 140 square miles, the earlier and later ice-floods differed only 200 feet in level, as is to be inferred from the two ice-lines on Ragged Peak. And on the Cathedral Range, which was in large measure the generator of this immense ice-field, being the great hedge behind which the wind-blown snows accumulated, the difference was least of all. From Cathedral Peak eastward to Mount Lyell it lessened by degrees until at length it became insignificant.

The figures are but a very few out of many scores determined by the writer on both ice-lines. Indeed, the total number of determinations made was large enough to enable him to construct a contour map of each ice surface. These contour maps, he is happy to say, have furnished excellent proof of the mutual concordance and consistency of the data.

The group of pinnacled mountains, it will be clear from the foregoing, stands in a region where the two ice-floods reached substantially the same height. Most of the work of paring away the sides of the pinnacles and crests was done by the earlier ice-flood, which was the one of greater duration, but the later ice-flood undoubtedly did much to accentuate the effect produced by the first. It is a significant fact that farther down on the Sierra flank, where the ice-lines diverge widely in altitude, and where the fluctuations in level of each of the floods no doubt were of considerable amplitude, no attenuated pinnacles or crests rising abruptly from ice-rounded mountains are to be found.

In Greenland, which is one of the few parts of the earth even now under the dominion of the ice, an Eskimo word is commonly used to designate those barren rocky summits that protrude here and there above the rapidly descending glaciers forming the fringes of the vast and otherwise continual glacial mantle. That word is *nunatak*. Physiographers throughout the world have adopted it as a technical term for rocky summits rising above surrounding ice-sheets and glaciers. The pinnacles and crests of the Cathedral Range might, therefore, be referred to as *former nunataks*. But the appropriateness and desirability of so styling them are, in the writer's opinion, open to question.



AN UNUSUAL VIEW OF THE CATHEDRAL

Photo by Willard D. Johnson



COLUMBIA'S FINGER, AT THE HEAD OF LONG MEADOW

Back of it looms another crest of the same type. In the center is the tower of Cathedral Peak. On the right are the triangular teeth of Echo Peak

Photo by F. E. Matthes

For one thing, it must be borne in mind that the pinnacles and crests were not the only summits of the Cathedral Range, nor of the entire High Sierra, that remained uncovered by the ice. There were many larger and more massive summits of varying shapes and designs, and even occasional plateau-like tracts. Only half a mile to the southwest of Unicorn Peak, for instance, stands a massive peak of blunted, pyramidal form (still unnamed, although higher than Unicorn) that rose several hundred feet above the ice. Parsons Peak and the broad-topped mountain (still unnamed) northeast of Vogelsang Pass are examples of elevated plateaus that remained emergent. Surely no one would think of placing these in the same class with the attenuated crest of Unicorn Peak, the triangular teeth of Echo Peak, or the ethereal spires of the Cathedral. "Former nunatak" might do in a generic and vague sense for all of them, but there is clearly need of a distinctive term for the more fragile, evanescent forms. What is more, there is need, it seems to the writer, of a term from the Sierra Nevada itself, if possible from the locality where the type is found in its purest form.

Now, as a matter of fact, neither Unicorn, Echo, nor Cathedral represents a "pure type" of mountain sculpture. In each the paring effect of the ice is somewhat obscured or even outweighed by other influences, either by the headward gnawing of local cirque glaciers or by peculiarities of the structure of the rock. When closely analyzed each is found to present a rather complex case. But fortunately there are in the same neighborhood three other peaks or crests each of which might well be taken as a type example.

The first of these is that narrow, linear, bladelike crest southwest of the Cathedral Pass and overlooking Long Meadow, which has been aptly named Columbia's Finger. On the topographic map the name is misplaced, and as a consequence there has arisen some confusion as to the identity of the feature to which it is supposed to refer. The writer himself is willing to admit some uncertainty on his own part, but, if form be the main criterion—and it certainly should be in a case of this sort—then the name surely belongs to the crest just mentioned. For that crest terminates southward in a tall, columnar

Back of it looms another crest of the same type. In the center is the tower of Cathedral Peak. On the right are the triangular teeth of Echo Peak.
Photo by F. E. Matthies

rock pinnacle that seems to point heavenward like a slender, tapering finger (Plates XIII and XIV). It is especially impressive when viewed endwise, from the direction of Long Meadow, and doubtless it was named by someone who traveled through that flat on his way to Soda Springs. The case is parallel to that of Unicorn Peak, which was named unquestionably by someone in the Tuolumne Meadows, and whose crest does not resemble a pointing horn except when viewed endwise, from one particular direction.

The second crest in question rises a scant mile to the north of Columbia's Finger, and is of exactly the same narrow, linear type. It even duplicates the latter's terminal pinnacle, but only in what, by contrast, might be called a "stubby thumb." More perfectly modeled even than Columbia's Finger, this crest eloquently tells its story—one wonders that it should still be without a name.

The third crest is a much more imposing feature than either of the foregoing. Rising abruptly from a long-drawn ridge as even-topped as the roof of a house, about a mile south of the Unicorn, it attracts the eye at once by its wonderful symmetry and the supreme boldness of its design. Seen endwise it seems but a narrow blade, springing almost without transition from the broad mountain under it. From certain directions it is suggestive of the upper half of an ornamental "fleur-de-lis," but from most view-points it resembles nothing so much as a splendidly sculptured, gigantic cockscomb. Indeed, it stands planted upon the ice-smoothed ridge as a cockscomb surmounts the proud head of a cock.

The appropriateness of the name Cockscomb may be judged from the view reproduced herewith. The writer does not claim to be a connoisseur in poultry; nevertheless, he believes that the likeness to a lobate cockscomb is fairly close—as close as one might expect to find in a piece of mountain sculpture.

Last summer it was the writer's pleasure to accompany a party from the Sierra Club under the leadership of Mr. Colby across the Cathedral Range by the natural pass above Elizabeth Lake, and into the country at the headwaters of Echo Creek, where the Cockscomb stands. He took that occasion tentatively to submit to those present the name Cockscomb, and was

gratified to find it meet with general approval. And so, with additional confidence, he now submits it to the entire membership.

There is a special advantage in the adoption of the name that is worth pointing out. Not only is the appellation Cockscomb apt because it is descriptive of the form of this crest, but it would also be an extremely convenient generic term for the designation of all similarly sculptured crests—of all crests such as those previously described, which owe their attenuated linear forms to the paring action of the ice that split upon them and passed on either side without overwhelming them. It would admirably serve the physiographer's needs as standing for the type of mountain sculpture of which the beautiful crest under discussion is the finest example known.

It is a pleasure to record here the successful ascent of Cockscomb Crest last summer by Mr. Walter L. Huber. As may be surmised from the picture, the peak is of the kind that puts the boldest of mountaineers on his mettle—nor has it been scaled but twice, so far as is known. At the time of his ascent Mr. Huber believed himself to be the first to reach its summit, but, as he recently wrote me, he has since learned that in 1914 the Cockscomb was successfully scaled by Messrs. Lipman and Chamberlain of the Sierra Club. All three deserve our heartiest congratulations.

In conclusion, a word anent the desirability, the urgency even, of the members of the Sierra Club giving serious thought to the bestowal of appropriate names upon those peaks, lakes, and other prominent landmarks within the Yosemite National Park which are as yet unnamed. The next few years doubtless will see a tremendous influx of tourists and pleasure-seekers into the higher portions of the park, more especially into the Tuolumne Meadows and the Lake Merced neighborhood. That influx, indeed, has already set in, as all those of us who camped with the Sierra Club at Soda Springs last summer have had ample opportunity to see for ourselves. One inevitable result will be the proposal of names for all such features of the landscape as are of especial popular interest and still without names on the map. That this naming is likely to be mostly haphazard and ill-considered is almost a foregone

conclusion—one need but visit a tourist resort where the naming has been left largely to the public and the guides. We of the Sierra Club, it seems to the writer, owe it to the glorious mountain country that is so dear to us to forestall such a fate for its landmarks. As it is, some of them already bear names that are distinctly inappropriate or even objectionable.

The writer ventures to make this suggestion, although he is by no means certain that Cockscomb Crest, the name proposed by him, will stand. It is still to be acted upon, first by the Sierra Club as a whole, and second by the United States Geographic Board. But he cherishes the hope that in any event his proposal will stimulate interest in the duty before us—and it is plainly a duty—of finding suitable names for the features of the High Sierra.



A BEAUTIFUL CREST OF THE COCKSCOMB TYPE

About one mile north of Columbia's Finger

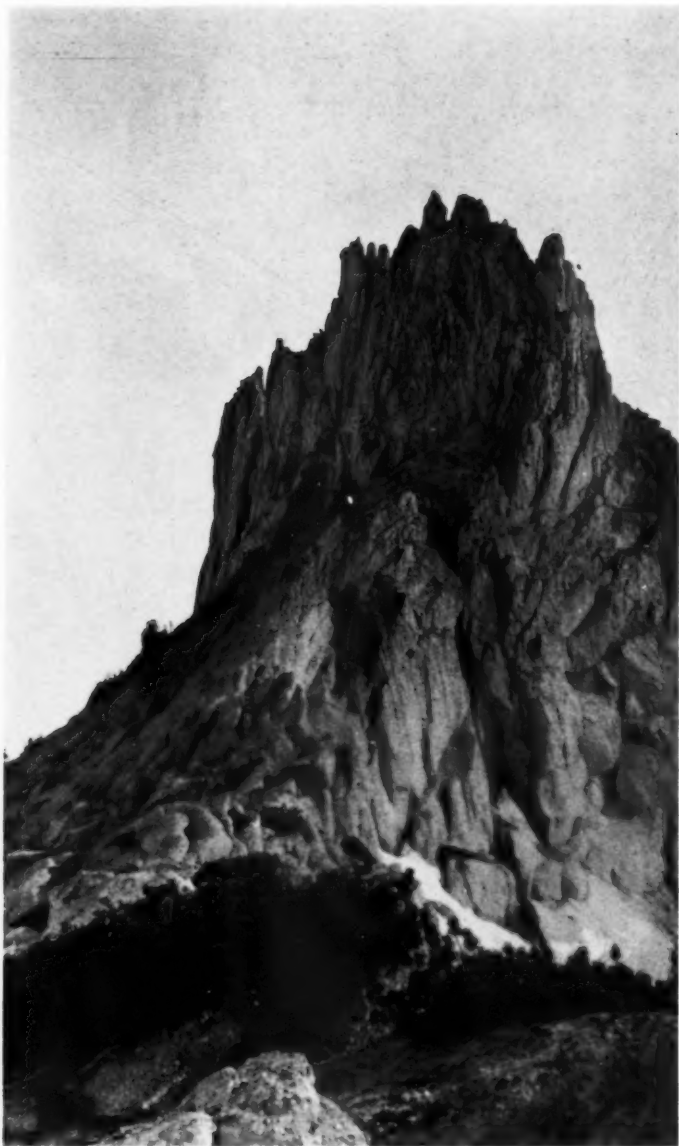
Photo by F. E. Matthes



NEAR VIEW OF COLUMBIA'S FINGER

The crest is least well defined at the north end, which is in the foreground

Photo by F. E. Matthes



COCKSCORN CREST

The most magnificent of all the sharply attenuated crests that indicate the highest level reached by the ice in the High Sierra

Photo by F. E. Matthes

THE PROPOSED ROOSEVELT NATIONAL PARK

BY HENRY H. SAYLOR, F. R. G. S.

AS I look over the notes jotted down while on our trail trip in the High Sierra last summer, they seem very prosaic, very brief, and, without the pictures that memory recreates, most uninteresting. Pale, ghostlike things they are now, like the wind-drifted tracks of a deer in the snow.

Mon.—8/4—Broke camp 10 a. m. Lunch at Tent Camp Meadow. Climbed to Goat Mt. Pass. Photographed there. Descended to Granite Basin, 5:30 p. m.

They give but the mere frame of the picture, upon the canvas of which must be laid all the color of granite peaks sheltering pockets of snow; rock-bound lakes of a blue-blackness that is found in no tubes of paint; stunted white-bark pines struggling for their very existence in the shelter of clean, gray boulders; alpine flowers of pastel colors and exquisite daintiness; the inverted bowl of clear blue sky, cloudless and serene.

We were in the midst of the proposed Roosevelt National Park, living a life from which was excluded all the petty things of our vaunted civilization. Far from railroad, from mail and telegraph lines, out of reach even of the automobile, which dares all but the wildest country in these modern days, we were free to look upon one of Nature's most glorious pages, bearing in characters of granite the history of the ages.

It was after five when we rode slowly down the steep trail into Granite Basin. Already the sun had dropped low enough toward the western mountain wall to bring on the evening chill of the high country. About a mile across the basin, as our maps showed, lay a lake fed directly by the melting snows of the peaks. While the rest of us unpacked and sought some sort of a level space upon which to unroll our sleeping-bags, the Oldtimer and the Doctor took their trout-rods and a book of flies and set out on foot to try their luck. Supper, the end and aim of all our High Sierra days, came, was seen, was con-

quered before we heard their call as they drew near our comforting beacon-fire. One carried a string of forty magnificent Eastern brook trout—gamest fish that swims. The other lugged his coat full of clean, white snow, gathered on the way, to serve as the only fitting resting-place for such trout while the camera recorded their glory.

Bundled snugly in sweaters, we lay spoke-wise around the fire, on the sweaty, hairy blankets that had eased our saddle animals throughout the day. The talk was not of peace treaties, nor of art, nor of business. As we lay toasting our toes, turning on this side and then the other to grill one favored spot of our respective anatomies and then another, with the vastness of the outer universe above us, out beyond the marching stars, we talked of flapjacks, of a bad spot in the day's trail, of the horse's small intelligence and wonderful memory, of the morrow's journey, of the day's work.

Life in the High Sierra was sufficient unto itself. For the moment we were free of civilization's bonds, free to live life in its essence, unfettered, unsophisticated, untamed.

A big mule, curious regarding this extraordinary pile of travel-stained canvas with a sparsely covered head sticking out of one end, came pounding slowly along the earth, my pillow, just as the gray of early morning was becoming tinged with the rosy glow over the eastern peaks. I rolled over for another nap as the packers were starting down the basin toward the faint tinkle of the bell-mare to round up the stock. The smell of frying bacon, blended nicely with the smoke of burning tamarack, tickled my nostrils. The rattle of fork and spoon upon tin plates warned me of a portentous event—breakfast—and I dashed for the icy stream to bring the quick reaction to numb limbs and full wakefulness to a body refreshed by a sleep that only the mountains can give.

One day was very like another. A great big breakfast of hot mush lubricated from the two-hole can of condensed milk; a heaping plate of fried bacon and potatoes; a third course, indefinitely prolonged, of sour-dough flapjacks anointed with strawberry jam; bread hot from the Dutch oven; three or four crisp fried trout eaten from the cob—a shameless meal, consumed without shame. Then the packing—in ordinary life and

ordinary places a most discouraging task, but here merely a succession of animals to be laden and hitched leisurely, methodically, joyously. Time was never of the essence of the contract. If we got under way at nine, we were in danger of breaking a record; if at eleven, all well and good. The five of us usually took the trail a half-hour or so ahead of the packers and train, meandering on our way. A curious bit of conglomerate rock would stop us for a look, a stream always—for our thirst was unquenchable. A vista down a valley, a new view of some familiar peak, an alpine garden of wild flowers, would call for unlimbering the camera and tripod.

Lunch was merely incidental, thanks to our nearly adequate breakfast. Its time was a widely variable one, its place determined largely by what was offered in the way of feed for the stock, in addition to the essential water. A small flour-bag on the saddle-pommel would disclose a few hunks of hard bread, perhaps some cold fried ham or bacon, certainly a dessert in a can of peaches or pears. Half an hour later would find us in the saddle once more.

The afternoon's ride was frequently the larger part of the day's journey. Its end had to find us near good grazing—not an easy thing to find in that country when the sheep occupy it—preferably close beside a stream, and with a grove of trees for our sleeping-quarters, if the gods were so kindly disposed.

My inclination is to speak of the evening meal, but good taste bids me forbear. With the brief admission that it was larger, more varied, with rather greater bulk than that offered by the matutinal affair, I am constrained to allow the reader's imagination to do its worst.

We were following the Muir Trail along the backbone of the Sierra from Grant Park to the Yosemite, by way of the South Fork of the Kings River, Granite Pass, the Middle Fork of the Kings, Grouse Meadows, the Evolution Basin, Vermilion Valley, Goodale Pass, Fish Greek, the Devil's Postpile, Thousand Island Lake, and down the Lyell Cañon to the Tuolumne Meadows. The names alone almost epitomize the glorious country that Clarence King, Muir, Le Conte, and others have known far better how to picture in words. May I claim only the credit of knowing enough not to try to describe it? If I

can convey the slightest impression of what life among its great peaks meant to us, I shall ask no more. The spell of those twenty days has been cast over each one of us, not for a month, nor for a summer, but as a spice to our whole short span of years. We entered upon it eagerly, expectantly, sniffing the air of adventure that always draws men's souls. We left it sadly, but mellowed, inspired, contented, with the calm, sure peace that the Sierra bestows upon those who will receive it.

Yet there are those who say that we Americans have no need of such a playground—there are square miles enough of national parks. They will quote you statistics to show how many cattle can be grazed upon that high pastureland, how many sheep can be fattened among the rocks of its precipitous slopes. They will talk of timber wealth and mining, of highways, and of the profits the Government might reap from its vast acres.

The area that it is proposed to take over from the national forest for a national park is not a cattle country; its sparse pasture will hardly repay even the sheepman's seeking; its trees, with the exception of the Sequoias in the lower warm corner, which the nation will not have destroyed, are not worth the lumberman's expense of cutting and taking out. This western flank of the Sierra is not commercially exploitable.

Assuming for the moment that it were or might be made valuable in dollars and cents, are we as a nation in need of the paltry return that might be squeezed out of it? Because Niagara has uncounted horsepower in its bosom, do we give it over to the engineers? Because our dooryard gardens could be made to produce food—and are so utilized in time of real need—shall we burn our perennials and shrubs, our flowering bulbs and trees?

Thank Heaven we have in this great land of ours some of Nature's manifestations that are worth going to see, worth preserving for all time, worth cherishing for the good of men's souls! The time is coming when it will be harder than it is now to set these great things of the earth aside for the good of all the people. Every day that fact is brought home to us in our efforts to restore the beauties of our cities and towns that have been defaced and almost destroyed in our unthinking march toward material things.

We must save the heart of the Sierra while we may. Always there stretches out to us the beckoning finger of the unattainable. The Yosemite, the Yellowstone, Glacier Park, even the recently remote Tuolumne Meadows, unrivaled in their different appeals, already are becoming crowded. He who learns to know them wants to go on beyond, along the harder, untraveled paths. Solitude, that greatest healer of the soul of man, is his great necessity. He will, he must, have the place where it may be found, and that place is, and will remain, the High Sierra.

SONG OF THE OPEN ROAD

BY WALT WHITMAN

A FOOT and light-hearted I take to the open road,
Healthy, free, the world before me,
The long brown path before me leading wherever
I choose.

Henceforth I ask not good fortune, I myself am
good fortune,
Henceforth I whimper no more, postpone no
more, need nothing,
Done with indoor complaints, libraries, querulous
criticisms,
Strong and content I travel the open road.

NORTHWARD OVER THE JOHN MUIR TRAIL

By FRANCIS P. FARQUHAR

THE John Muir Trail is by no means completed. Some very important sections have been developed by means of the funds appropriated by the legislature of the State of California, and these, together with the trails already existing, make it possible to traverse the length of the Sierra from Mount Whitney to Yosemite, but not entirely by the high mountain route that it is hoped will ultimately be opened. When the remaining links have been joined it will indeed be a magnificent memorial, a highway for devout pilgrims blessing the memory of the prophet who was the first to sing the praises of this glorious sequence of mountain, meadow, pass, and lake.

During the past year there have been two serious interruptions to the hitherto steady progress toward the completion and use of the trail. In the first place, Governor Stephens declined to approve the appropriation made by the legislature last spring to continue the construction during the next two years. Secondly, the route was swept from end to end last summer by a consuming horde of sheep and cattle. The first of these unhappy actions cannot now be helped, although the error can perhaps be brought so insistently before its author as to prevent a repetition. The second action is not likely to be repeated, for the protests of last season's campers have been numerous and vigorous, and there is assurance from the Forest Service that such abuse of grazing privileges as went on last summer will not again be tolerated. Another such season would permanently injure the feed resources at points essential to all continuous travel along the route laid out for the John Muir Trail.

The prospect of traversing the Sierra from one end to the other, close to the highest peaks and passes, has been an alluring one since the region was first explored. The records of Muir, Solomons, Le Conte, and the State and Federal survey parties must always be the envy of those of us who have followed after. For to them belong the rich experiences and high

adventures of the days when routes were uncharted. It is to their ardent spirits, to the fine skill of the members of the United States Geological Survey who mapped the intricate topography, and to the thorough labors of the trail-builders under direction of the United States Forest Service and the State engineers, that we owe thanks today for the conditions that make it possible to behold in comparative comfort the wonders of this incomparable region.

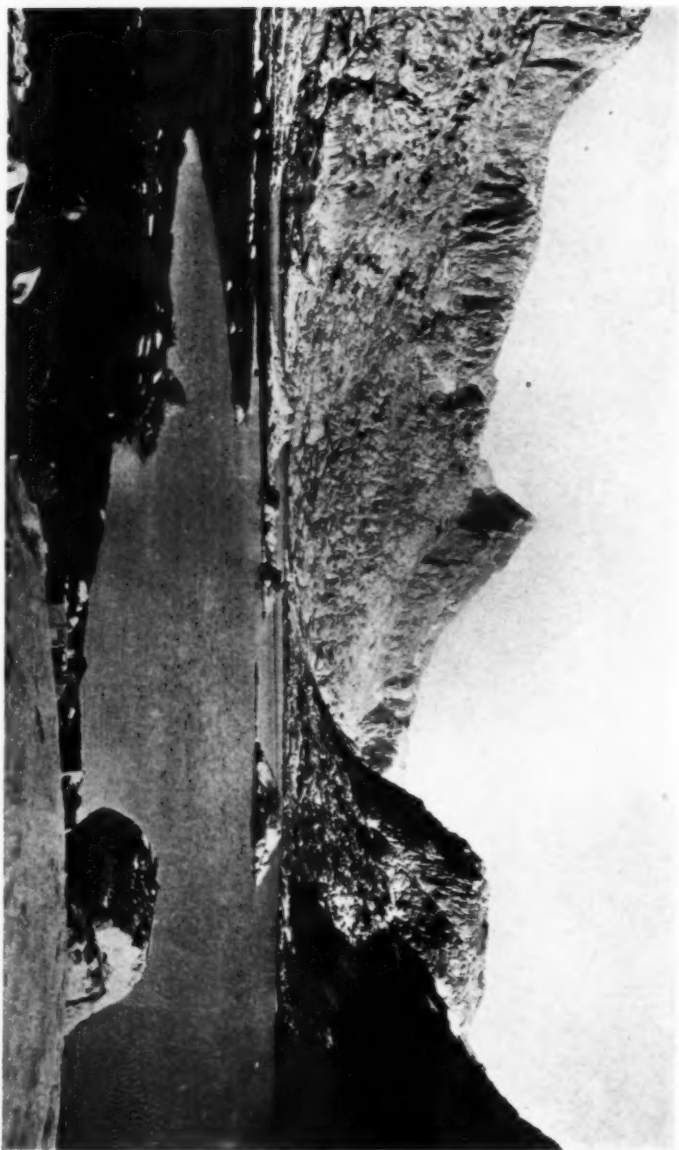
The route of the John Muir Trail as originally planned included a section from the head of Bubbs Creek in the Kings River region via Glenn Pass and Rae Lake to the extreme headwaters of the South Fork of Kings River, and thence over the divide to the head of Palisade Creek and down to Grouse Valley in the Middle Fork of Kings River. This section is not yet open for travel with animals. For the present, therefore, the John Muir Trail may be considered as following the lower route down Bubbs Creek to the main cañon of the South Fork of Kings River, thence ascending to Granite Basin by the Copper Creek Trail, over Granite Pass and down to Simpson Meadow. From this point a trail has been built up the Middle Fork to Grouse Valley, connecting there with the permanent route of the memorial trail. There are other sections of the trail that have not yet been improved to the standards established for the memorial, but they are passable and they follow substantially the ultimate route. During the past summer a party led by Mr. Herbert W. Gleason, of Boston, traveled the entire length of the route from Mount Whitney to Yosemite, taking the Granite Pass detour. Another party, of which I was the leader, picked up the trail at Kings River Cañon and, following almost literally in Mr. Gleason's footsteps, arrived at Yosemite about a week later. In the hope that the experiences of these two parties may be of benefit to subsequent travelers, particularly in respect to trail and feed conditions and practicable schedules of day's journeys, I offer the following comments on the route.

The section from Mount Whitney to Bubbs Creek was covered in the club's outing in the summer of 1916. Starting from Crabtree Meadow, at the base of Mount Whitney, it is an easy day's journey to good camping-ground in Tyndall Creek basin.

Last summer Crabtree Meadow was badly overrun with cattle, but presumably there will be better regulation in the future. There is sufficient feed at Tyndall Creek. The next day's journey crosses the main crest of the Sierra and skirts the source of Shepard Creek, which flows into Owens Valley on the east side of the range. After a short distance Junction Pass (13,400 feet) is reached, and the trail crosses over into the head of Center Basin in the watershed of Kings River. Prior to the opening of this section of the John Muir Trail, in 1916, it was practically impossible to cross with animals from the headwaters of the Kern to those of the Kings. Harrison Pass, a little farther to the west, had been negotiated by a few parties, but only at great risk, and it was never considered a practicable route for ordinary travel. The Junction Pass route, therefore, may be regarded as one of the most important contributions of the John Muir Trail toward freedom of travel in the Sierra.

An excellent camp-site is to be found at Vidette Meadows. Here the prospect is full of charm, the fishing is good, and the animals may recuperate in good pasturage. At this point one must for the present diverge from the high mountain route that we hope will soon be constructed. It is possible to cross Glenn Pass and camp at Rae Lake; but this is a hazardous route for animals even under the most favorable snow conditions. Moreover, one is compelled in the end to swing back by way of Woods Creek to Paradise Valley and eventually cross to the Middle Fork by Granite Pass. So, as there is a long journey ahead, it is perhaps best to go down Bubbs Creek from Vidette Meadows to the main cañon of the South Fork of Kings River.

The meadows in Kings River Cañon are privately owned, but feed privileges can be obtained at an established price per head. Camping is free. There is a small store at the place formerly known as Kanawyer's, where as time goes on one may be more and more likely to find supplies in desired quantities. From here one may telephone to Giant Forest or General Grant National Park and send telegrams and mail. It is the last possibility of the sort to be found for many a mile on the northward journey. It is well to overhaul the outfit thoroughly under the favorable circumstances of Kings Cañon and to give every at-



EVOLUTION LAKE AND MOUNT HUXLEY

Photo by F. R. Parker

SIERRA CLUB BULLETIN, VOL. XL.

PLATE XVII.



MIDDLE FORK OF KINGS RIVER BETWEEN GROUSE VALLEY AND SIMPSON MEADOW
Photo by F. R. Parker

tention to the animals' shoes, for the way ahead is rough and rugged.

The Copper Creek Trail starts a short distance west of the store, and a sharp grade begins almost immediately. Five thousand feet above the cañon floor a ridge is crossed and the trail passes into Granite Basin—a vast concourse of bare rock, water, snow, and bunch-grass, strewn about like miscellaneous raw material. Almost at the head of the basin, a little clump of tamaracks affords the only shelter for camp. The trail continues rough and very trying to the animals' hoofs over Granite Pass (11,333 feet) and for quite a distance down on the north slope. At Dougherty Meadows, about half-way down, we first encountered sheep and beheld the desolation they create. For a considerable distance the trail was obliterated by their tracks, the soil far and wide was pulverized, and all vegetation was clipped to a uniform height of some twenty inches from the ground. A fine dust hung in the air bearing with it a rank, obnoxious stench. May the traveler of future years be spared this irritating experience! This section is one of the famous beauty-spots of the Sierra. There is a fine stand of forest, and the views across the Middle Fork to Mount Woodworth and up the cañon to the Palisades are on the grand scale distinctive of Yosemite-like country. One can just see Tehipite Dome rising above the deep gorge to the westward.

Simpson Meadow is a delightful camping-spot, and it is worth while to "lay over" at this point for a day or so if time permits. The trip to Tehipite can be made from here, going down one day and returning the next. There are other choice spots ahead, however, and in any schedule of stop-overs Simpson Meadow should not be given preference.

There is now an excellent trail between Simpson Meadow and Grouse Valley. The cañon was formerly impassable from the mouth of Cartridge Creek to that of Palisade Creek, but in the summer of 1914 a considerable amount of work was done on this section through funds furnished jointly by the Forest Service, Fresno County, and the Sierra Club. The work was completed in the summer of 1916 with the aid of part of the money from the John Muir Trail fund. It is only a half-day's journey to Grouse Valley, and one may arrive in plenty of time

for an afternoon's golden-trout fishing. The falls of Cartridge Creek may be visited on the way. It is not a trail along which to hurry.

Grouse Valley is perhaps the most ideal camping-spot along the whole route. It is hard to keep from rhapsodizing upon it; but as the purpose of this article is primarily utilitarian, I will merely remark that water, fuel, shelter, feed, and fish do all abound. There are superb side-trips in every direction. An impressive view of the North Palisade can be obtained by taking the Bishop Pass trail up Dusy Creek. The ascent can be made by making a base camp at the head of this creek.

There were several large bands of sheep in the Middle Fork region last summer. The abomination was everywhere. At the close of the season these "hoofed locusts" were turned into Grouse Meadow itself, which was contrary to the regulations of the Forest Service. This action, however, was only one of a long list that go to prove the impossibility of regulating sheepherders. There is only one way to protect the Sierra for recreational and educational purposes, and that is to exclude sheep entirely. When this region becomes a part of the national park system, as it inevitably must, the grazing of sheep will be prohibited in accordance with the established policy of the Park Service. The same prohibition should be extended all along the line of the John Muir Trail, even in those sections that may remain under the jurisdiction of the Forest Service. The Sierra Club, led by John Muir himself, worked for many years to bring about the exclusion of sheep from the west side of the Sierra, and at length prevailed, only to have the work undone in the past few years under the guise of a war measure. If there were not good assurance that sheep would in the future be excluded from this region, I would not trouble to write this article, for but few people would care to follow the John Muir Trail.

The next stage in the journey northward is the most splendid of all—over Muir Pass and through Evolution Basin. Until the building of the new trail, Muir Pass had rarely been crossed with animals. George R. Davis, of the United States Geological Survey, was probably the first to succeed when he led his pack-train across in 1907. Le Conte, Hutchinson, and McDuffie, of the Sierra Club, followed in 1908. But it was not

until the construction of the John Muir Trail that this route became at all practicable for any except the most skillful and intrepid pioneers. A passable trail was completed in 1917, and additional work during the past season of unusual freedom from snow finally opened the way to regular and safe travel.

In order to make the crossing with full allowance for unexpected happenings, it is advisable to make an early start. The full distance can undoubtedly be covered in one day from Grouse Valley; but it is very much better to move up to Little Pete Meadow, or even a few miles farther, and camp close enough to the pass to make the following day's journey a truly enjoyable one. In sheepless years there is good feed at Little Pete. Last year we found it all consumed and had to move up Le Conte Cañon to an altitude of a little over ten thousand feet, where we found shelter and a little bunch-grass near a diminutive lake. It was a cold camp last year, and in many seasons would probably be occupied by snow even in August. Unless the conditions are definitely known, therefore, it is best to camp at Little Pete Meadow.

Just before you reach the crest of the pass on the south side, you come to Helen Lake; on the north side is Wanda Lake. They are named for John Muir's two daughters. The crest of the pass is at an altitude of 12,059 feet. To the west is Mount Goddard (13,555 feet); to the south a group of black summits, all about 13,000 feet; and almost overhead to the southeast grimly crouches the Black Giant, otherwise known as Mount Goode (13,312 feet). Northward stand the crags of the Evolution group: Huxley, Haeckel, Spencer, Darwin, and Wallace. Fiske and Powell are even closer. Darwin is the highest, 13,841 feet; the others are very nearly as high. As the trail passes below Wanda Lake these peaks are disclosed in ever-changing perspective. It is well that the trail hereabouts is well graded, for the eye becomes fascinated by the spectacular surroundings and cannot be spared for such trivial matters as the insurance of the neck. Two small irregular lakes are passed at the base of Mount Huxley, and the trail then descends to Evolution Lake. Camp can be made at the lower end of the lake, although the shelter is scanty. We found the place preempted by sheepmen and a band of two thousand head of

woolly things that gave off a powerful aroma, causing one to have great sympathy with the teacher in that well-known episode of Mary's little pet. Even under the best of circumstances, it is perhaps as well to continue two or three miles farther and camp by the side of Evolution Creek near Colby Meadow. No better camping-ground could be desired. A day or two should be spent here, if possible, permitting exploring trips back toward the Goddard Divide and among the Evolution peaks. The mules and horses will not object to a rest.

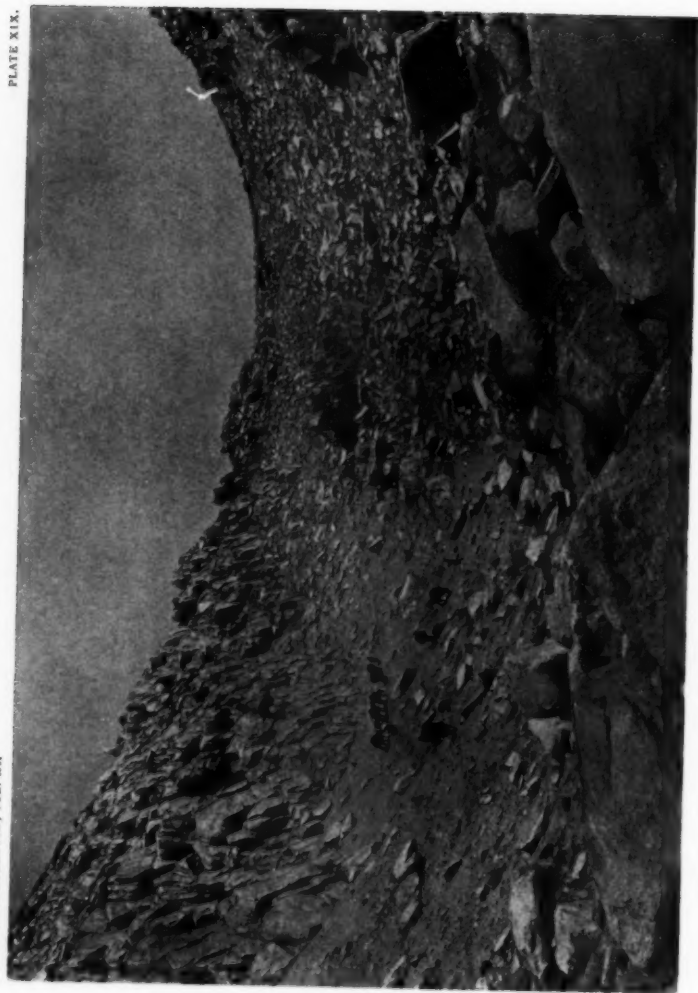
Blaney Meadows is the objective for the next day's travel. The John Muir Trail builders have put this section in excellent condition, regrading the steep places and smoothing out the rough ones. Suspension bridges have been built across the South Fork of the San Joaquin just below its junction with Evolution Creek and across Piute Creek where it joins the South Fork. The trail at this point, and indeed all the way from Simpson Meadow, is a fine indication of what the John Muir Memorial will ultimately mean when the entire route has been completed to the same degree of excellence.

From Evolution Creek it is all good going and slightly downhill, so you can pause for a moment at the junction of that creek with the South Fork to observe the trail that branches to the southward up the cañon of North Goddard Creek to Hell-for-Sure Pass. Prior to 1917, when the John Muir Trail opened Muir Pass to general travel, this was the only practicable route between the South Fork of the San Joaquin and the Middle Fork of Kings River. It reaches the latter at Tehipite Valley, or at Simpson Meadow by way of Tunemah Pass. If you prefer to return to the Kings River country rather than continue to Yosemite, you may like to go back that way. You will find the Tehipite route better than the Tunemah Pass route, but in either case you will cock your hat and tighten your belly-band and swagger a bit as you cross Hell-for-Sure, which you will be ready to admit is not a misnomer. First, however, you must not fail to go on to Blaney Meadows.

On the way you will come to the second suspension bridge at the crossing of Piute Creek. This spot marks the boundary of the proposed Roosevelt National Park as delineated in the bill pending in Congress and indorsed by the Sierra Club. To



MARIE LAKE FROM SELDON PASS
Photo by Francis P. Farquhar



CLIMBING SILVER PASS FROM THE SOUTH
Photo by Herbert W. Gleason

anyone who has just passed through the Evolution Creek region it must seem incredible that there could be any delay in coming to the conclusion that it should be included in a national park, for it is superlatively park country of vastly greater value for its scenic wonders and its recreational opportunities than for any commercial uses. I have not mentioned the park heretofore, as this is the first time that we have come upon its proposed boundaries, with the slight exception of the pass between the Kern and the Kings, where the trail runs for a mile or two on the east side of the crest just outside of the boundary-line. Otherwise the whole region from Mount Whitney to the junction of Piute Creek with the South Fork of the San Joaquin is embraced in the limits indorsed by the Sierra Club after years of investigation and consideration.

Blaney Meadows are privately owned, and the rights of the owners should be regarded. There are two hot springs, one private, the other free for public use. You must be sure to time your arrival there for Saturday. The public spring and camping-grounds are on the left (southerly) bank of the stream, which is fordable at this point. The feed is good and there are plenty of fish.

Continuing the journey northward, the trail leaves the meadows about a mile down-stream on the right-hand side and begins to climb abruptly up the side of the cañon. The trail is steep, and last year it was much in need of brushing out. It will be worse next year unless some work is done on it. After a climb of some twenty-five hundred feet hanging meadows begin to appear, and presently you are once again on the top of things, out of the woods and among the "sky parlors." The trail is frequently hard to find because of numerous cattle-paths, for this is a cattle country. When in doubt bear a little to the left and you cannot go far wrong—presently you will come upon a group of little lakes between which the trail winds. One of these is named "Heart Lake" on the map of the United States Geological Survey; nevertheless, a few hundred feet higher, just as you enter upon the final ascent of Seldon Pass, you will find another little lake, barely indicated on the map, which is unmistakably the genuine article.

Seldon Pass (10,800 feet) is the fourth important pass on

the northward route from Mount Whitney, the others already crossed being Junction, Granite, and Muir. It is not in natural features the most formidable, that distinction easily resting with Muir Pass, but temporarily at least it is the most difficult for a pack-train. Particularly as you cross Seldon Pass—and, later, Silver Pass—will you grieve that Governor Stephens declined to approve the appropriation last year. You will wish that he were with you—on a wabby horse.

The trail mounts through a rocky gorge over ledges and talus-piles to a slight depression in the ridge between Mount Senger (12,253 feet), on the right, and Mount Hooper (12,322 feet), on the left. As you reach the crest a new country sweeps into view. Directly below lies Marie Lake, broken into a picturesque pattern by islands and promontories of granite. Beyond is the valley of Bear Creek, dominated on the east by the buttressed masses of Seven Gables (13,066 feet) and Mount Hilgard (13,351 feet). It is a region enticing to the explorer and the mountaineer. Innumerable lakes and peaks lie along the main crest of the Sierra, notably Lake Italy and Mount Abbott (13,736 feet) with its neighbors. No pass has yet been discovered, however, across the Mono Divide, and the route of the John Muir Trail is forced down to lower country by way of Bear Creek and Vermilion Valley.

The descent of Seldon Pass to Marie Lake requires careful work by the pack-train leader, but it is only a short distance, and the trail soon comes out on easier terrain. Skirting the western margin to a promontory that nearly cuts the lake in two, the trail there crosses the outlet and declines to the bed of a gully down which flows a stream toward Bear Creek. To the left rises a cliff of a few hundred feet, beyond which on a bench lies Rose Lake, invisible at all times from the trail. The trail continues by easy stages down to the main waters of Bear Creek, where it crosses to the right bank. Cattle-tracks may cause some confusion, but if the general direction is maintained the main trail will soon be picked up. There are some bad places near the crossing of Hilgard Creek, and a watchful eye must be kept on the footing, as there are some slippery passages of "slick" rock. There are several possibilities for camp-sites along Bear Creek, but unless it is planned to wait over a day

or so for side-trips to the Lake Italy and Mount Abbott region it is well to keep on a few miles farther. The cañon presently inclines to the west, and soon afterwards the trail leaves the creek and ascends the northern wall leading to Bear Ridge. This is all forested country, lighted by many a garden of brilliant flowers. About six or seven hundred feet of steep climbing will bring you to a particularly luxuriant garden, with excellent feed and a small stream of water. Level beds are scarce, but they can be found, and at any rate the charm of the spot is such as to make comfort a secondary consideration.

The next day presents a choice of objectives. You can camp in Vermilion Valley if you want to and if you can find feed well enough concentrated to hold your stock together. But I think you will prefer to continue up the North Fork of Mono Creek to a higher and wilder country. An alternative is to go to Graveyard Meadows on Cold Creek. This route leads to Silver Pass and the Lake of the Lone Indian, but parts of it are in bad condition, and on the whole it is not nearly so interesting as the Mono Creek route. The latter, moreover, is the official line of the John Muir Trail. From the camp on Bear Ridge the trail ascends a few hundred feet to the crest and then winds down a gradual slope through a fine forest westward and presently southwestward to Vermilion Valley. It is a discouraging trail, for it travels for several miles in precisely the opposite direction from that of your destination. It brings you into the lower end of Vermilion Valley, where there is a general rendezvous of trails from all directions. When you reach the floor of the valley, turn sharply to your right and follow up Mono Creek. Do not stop at any point below the North Fork. Start from Bear Ridge camp early enough so that you will have plenty of time to climb up into the North Fork country. Two or three miles stiff climb above the junction of the North Fork with the main stream of Mono Creek there is a wonderful box cañon, with fine feed and all the elements of a happy camp. As you look back across the cañon of Mono Creek you will be impressed by the fact that after a long day's journey you are not many miles from where you camped the night before. You will scan the southern wall of the cañon with the hope of finding a route for a trail. If you

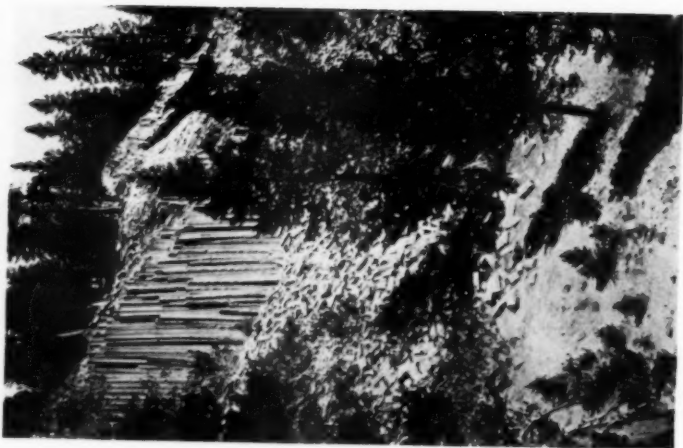
succeed and can demonstrate its feasibility, you will have done a great service, for it is planned to bring the John Muir Trail from Bear Creek over the ridge as close to Volcanic Knob as possible just as soon as a route can be surveyed down into Mono Creek Cañon.

The camp at North Fork of Mono Creek is an excellent base from which to make side-trips into the country toward Red and White Mountain. The Mono Creek region with its four Recesses is also within reach. In fact the only direction that seems closed to further travel is that which is actually the route of your next day's journey. A hundred yards or so above the upper end of the little meadow the trail crosses the stream to the right bank and immediately begins to zigzag up the towering wall to the west. It is not half so bad as it seems, and even if the trail were far steeper and more perilous the effort would be amply repaid by the striking panorama that unfolds with every step. To the southeast Volcanic Knob and to the northeast Red and White Mountain delight the eye, while the vigorous lines of the deep cañon below are enhanced by the foreground of graceful hemlock tops. The ascent terminates very abruptly as the trail emerges upon an unexpected large meadow that presents a remarkable contrast to the rugged country just below. For the next hour one may wander sedately as through the Elysian Fields. Birds and flowers are in abundance and trout flash in the gently flowing stream. Ahead glitter shattered cliffs of white granite.

Keeping on the southwest side of the meadow to its head, the trail there crosses the stream, winds up a series of ledges to the east, and comes out on a barren upland. Here is a nameless lake, the source of the stream that has been the companion of the trail since leaving the cañon. The way lies clear along the east shore of the lake until its head is reached. Then comes the pass. A few minutes' climb brings you to the summit and to a view that will never be forgotten. This pass is not named on the United States Geological Survey map, at least as distinct from Silver Pass, but a sign-board bears the name Goodale Pass. The old trail crosses less than a mile away to the west, coming up from Graveyard Meadows and descending to the Lake of the Lone Indian, and the name Sil-



LAKE OF THE LONE INDIAN
Photo by Herbert W. Gleason



DEVIL'S POSTPILE
Photo by Francis P. Farquhar



DEVIL'S POSTPILE
Photo by Francis P. Farquhar

ver Pass properly belongs to that crossing. But inasmuch as they are so close together and as they both are on the Silver Divide, it is perhaps just as well to include both crossings under the name of Silver Pass. The view is equally inspiring to the north and to the south. Behind are Volcanic Knob, Seven Gables, and, closing the horizon, Seldon Pass. Ahead lies the tremendous cañon of Fish Creek, sweeping in a noble curve, and far beyond stand Mount Ritter and Banner Peak, flanked by the Merced group on the left hand and the boundary peaks of the Yosemite National Park on the right. Thus suddenly comes the realization that the end of the journey is in sight. Yet it is not to be accomplished in a day, nor even two, for it is farther than one would at first suppose.

From Silver Pass (10,700 feet) the trail descends to a series of benches, each with its own little lake, and by successive stages reaches the head of Upper Cascade Valley in Fish Cañon. It is not a smooth trail; in fact, it requires constant attention on the part of both man and beast. In some places it is as steep as a trail can be without qualifying as a ladder. Nevertheless, considering the ruggedness of the country, it is quite surprising that there should be a trail there at all, and its steepness is no discredit to the builders. It can stand improvement, however, and is one of the urgent reasons for continuing the John Muir Trail appropriations.

Camp would ordinarily be made in Lower Cascade Valley. There is everything there to recommend it, provided that the cattle have not devoured all the feed. Last summer Fish Cañon was crowded with cows, and by the time we reached it there was nothing left but starvation rations. In fact, we were forced to continue all the way to Fish Valley, in order to find feed for our beasts, making camp at nine o'clock at night. Presumably, conditions will not be so bad another year, and the traveler may reasonably count on making camp in Cascade Valley. Before leaving the high mountains of the upper Fish Creek region I want to speak of a particularly beautiful peak that towers above the head of the cañon like another Matterhorn. It is of white granite, shattered and splintered at the top. It is the culminating point of a spur that juts out at right angles from the Silver Divide. No one who goes to the head

of Fish Cañon can fail to identify it. As far as I have been able to ascertain, it has no name, and I propose that the name Mount Izaak Walton be given to the whole spur, and that the dominating tower at the end be called Piscator Peak. In view of its relation to Fish Cañon, I submit these names as singularly appropriate.

The trail down Fish Cañon is uneventful until at a level of about eight thousand feet it crosses to the left bank of the creek and is forced up the cañon side as the bed of the stream becomes choked between impassable walls. A stiff climb and a corresponding descent on the other side of the ridge away from the creek will bring you to a hot spring. A little farther on the trail emerges into Fish Valley, rejoining the creek. At the lower end of the valley is an excellent meadow, where even in such a season of scarcity as last year there was sufficient feed reserved for saddle and pack animals. If camp has been made in Cascade Valley the preceding night, Fish Valley can be reached by noon. But it is not advisable to proceed farther that day. The fishing is excellent here and it is a good place for resting.

The Devil's Postpile is distant an easy day's journey from Fish Valley. The trail leaves the valley near its lower end and climbs out over a spur of Pumice Butte that enters the angle between Fish Creek and the main stream of the Middle Fork of the San Joaquin River. Continuing northward, the route follows Crater Creek for a way and then surmounts another slight ridge to the west, climbs some more, and finally comes to the main waters of the Middle Fork of the San Joaquin close to Rainbow Falls. Here is one of the treasure-spots of the Sierra, a lacy curtain of shining white water falling some eighty feet over a ledge of black basalt. In form the fall suggests the Vernal in Yosemite, but in surroundings and general character it is unique. About two miles farther is the Devil's Postpile. Here indeed is one of the wonders of the world, not half enough appreciated by the people of the United States. It is one of the three best examples known of the phenomenon of basalt columnar formation. The other two are the Giants' Causeway on the coast of County Antrim, Ireland, and Fingal's Cave on the island of Staffa, Scotland, both famed far and wide in Europe as popular wonders and scientific specimens.

It is decidedly worth while to spend an extra day in the vicinity of the Postpile. Its fascinating columns and many curious aspects deserve careful study. Moreover, in the immediate neighborhood there is a hot spring and a soda spring of the highest quality. Camping is good either at Soda Spring Meadow, or at Reds Meadow, a mile away.

The homestretch now begins. The trail is so well known it hardly needs description. Going north from the Postpile, it passes through Pumice Flat and Agnew Meadows, and then climbs gently up along the east side of the cañon of the Middle Fork of the San Joaquin. And now comes the grand view of the Mount Ritter range—black and white, majestically towering above the cañon.

At the head of the cañon the trail forks, the right-hand branch continuing over Agnew Pass to Gem Lake and Parker Pass, the left-hand winding up to Thousand Island Lake. Yosemite can be reached by way of Parker Pass and the Mono Trail down the Dana Fork to Tuolumne Meadows, but it is a somewhat longer route, and is not the John Muir Trail. There is also another way of reaching Thousand Island Lake from the Devil's Postpile, taking a trail that goes up the west bank of the Middle Fork by way of Shadow Lake and Garnet Lake. Thousand Island Lake is likely to be a chilly camp, for there is not much shelter. Here I must utter my last curse upon the sheep. In the phrase of the Greek mountaineer, "Oh, that they may perish!" Again I say, it is to be either sheep or travelers in our mountains; there cannot be both.

From Thousand Island Lake the trail immediately crosses Island Pass and descends into the basin of Rush Creek. Here for the first time since Junction Pass the John Muir Trail crosses to the east side of the Sierra crest. It is for almost as brief a distance, for after crossing the several sources of the creek the trail climbs to Donohue Pass and descends again to the west side. The trail through Rush Creek Basin is not easy to find in several places, and needs better marking. The upper part of the basin is usually heavily laden with snow, but last season we found it clear even to the summit of the pass. In fact, not once from Kings River Cañon to Yosemite did we cross a patch of snow. This is a condition not likely to occur

again for years, even during the month of August. In using this article for a guide, therefore, due allowance should be made for this unusual condition.

Donohue Pass (11,200 feet) marks the boundary of the Yosemite National Park. The trail crosses and recrosses the stream flowing from the glacier of Mount Lyell, descends by well-built grades, and comes out upon the level floor of Lyell Cañon. The journey is practically over. There is no longer any need of a guide; trails are excellent and well marked, camp can be made anywhere, and feed is a hundred times more abundant than anywhere else along the entire route. In our case, we made camp for our last night in the open by the side of the Tioga Road below the Tuolumne Soda Springs. Next day we reached Yosemite by way of Lake Tenaya and Mirror Lake and came to the end of the John Muir Trail.

For convenience of the traveler I append a summary of the schedule of our party, among whom were Jesse B. Agnew, of Visalia, California; Allen Chamberlain, of Boston, Massachusetts; Dr. G. Lenox Curtis, of New York City; and Henry H. Saylor, of Huntington, Long Island, New York.

Arrived	Altitude (feet)	Left
Aug. 2 Kings River Cañon	7,645	Aug. 4
" 4 Granite Basin	10,000	" 5
Granite Pass	11,333	
" 5 Simpson Meadow	6,000	" 6
" 6 Grouse Valley	8,500	" 8
" 8 Le Conte Cañon	10,300	" 9
Muir Pass	12,059	
" 9 Evolution Creek	9,700	" 10
" 10 Blaney Meadow	7,600	" 11
Seldon Pass	10,800	
" 11 Bear Ridge	9,400	" 12
" 12 North Fork of Mono Creek	8,800	" 13
Silver Pass (Goodale Pass)	10,700	
" 13 Fish Valley	6,500	" 15
" 15 Devil's Postpile	7,500	" 16
" 16 Thousand Island Lake	9,850	" 17
Island Pass	10,473	
Donohue Pass	11,200	
" 17 Tuolumne Meadows	8,500	" 18
" 18 Yosemite Valley	4,000	" 19

Total—13 traveling days from Kings River Cañon to Yosemite Valley.



THE MINARETS
Photo by William E. Colby



MOUNT LYEELL, AUGUST, 1919, SHOWING UNUSUAL RECESSION OF SNOWFIELD
Photo by Francis P. Farquhar

HIGH PLACES OF THE SOUTH

By FRANCIS M. FULTZ

THE mountains of southern California do not receive the attention of which they are worthy for their uniqueness and rugged topography, nor due consideration for their alpine character. This situation is largely due to the overshadowing place which the Sierra Nevada holds among the ranges, not only of our Western Slope, but of all temperate North America, and to the no less potent fact that the forest-cover in the south is largely elfin-wood, which suffers much, in popular opinion, in comparison with the giant forests of the north.

In regard to this elfin-wood—otherwise known as *chaparral*—I wish here to remark that it is not the least of California's wonders. It forms the most extensive as well as the most highly developed area of its kind in the world. It is a real forest of real trees, and its presence is an essential factor in the fertility and prosperity of the south. And it takes the loss of a couple of hundred thousand acres, and the consequent denudation of whole watersheds—the result of the recent fires in the San Gabriel Mountains—to arouse people to a realization of this fact! I should like to say something more about this matter right here, but I must go back to my text, "High Places of the South," or I shall not have space for what I have in mind on that subject.

San Antonio, San Gorgonio, San Jacinto, and the mountains adjoining these three culminating peaks are the high places in question. To them the southland looks for its water-supply. While their lesser comrades come in for a share of the work, the three giants are far and away the big factors in the case. The "big three" are all sky-piercing peaks, and the groups which they respectively culminate—the San Gabriel, the San Bernardino, and the San Jacinto mountains—all furnish true alpine conditions.

San Gorgonio is the highest peak in southern California, reaching 11,485 feet. Next in order is San Jacinto, 10,805

feet; then San Antonio, with an altitude of 10,080 feet. The Southern Section of the Sierra Club makes a pilgrimage to at least one of these three peaks every year. The San Antonio outing is either a two- or a three-day trip. Trips to the other two peaks require four days each. All three regions afford ample opportunities for longer and more extended trips, on which the time can be spent with much profit and enjoyment. The club has made one such trip in the back ranges of the San Gabriel Mountains northwest of Mount San Antonio.

The San Gabriel back-ranges afford ideal conditions for summer tramping, especially for trips during June and July. The June conditions there very much resemble what may be found in the High Sierra in late July or in August. The mountains run up to heights above the limit of the chaparral and are clothed with fine stretches of pine and other needle-leaved trees. There the sugar and yellow pines grow to a size approaching that of their Sierra Nevada brothers, and the incense cedars are as fine as can be found anywhere. Great silver firs also abound, while on the higher ridges are lodgepole and limber pines. There are rugged peaks there, too, and deep chasms. From a bold ledge on the east face of North Baldy you may look down into the bed of the San Gabriel River over three thousand feet below, and the abrupt descent of the cañon's wall does not suffer in a comparison with the side of Yosemite's gorge when viewed from Glacier Point. And a gold mine opens out on this selfsame ledge, with a quartz-mill at its mouth! Across the cañon from this view-point stands old San Antonio, which in May, and often until July, is white-capped and cloud-encircled. Few trampers ever reach this view-point, for the trail to it comes in from the desert, following the old mine road, over which for some years now there has been no traffic.

The trip to the summit of San Antonio is considered an easy one. Therefore, in order to throw into it some thrills, it is usually scheduled for some time in the early spring, while a goodly stretch of the trail is still snow-covered. The climb begins from Camp Baldy, from where the usual route to take is the Bear Cañon Trail, by which the ascent is gradual and easy, although to the mountain novice it usually seems an up-hill

road that has no end. As a rule, most of the party return from the peak by way of the "Devil's Backbone," leaving the summit from the eastern end. This route has thrills of its own, regardless of the season. But even this trail, if we may call it such, does not furnish excitement enough to the more adventuresome ones, who, to satisfy the daredevil spirit that is rampant within them, plunge straight down the mountain side for Camp Baldy, coasting on snow part of the way, slipping with the loose shale on steep slides part of the time, dropping from ledge to ledge in narrow gulches, darting from tree to tree on the steep pine-covered slopes to keep themselves from going headlong, and so on, until they suddenly land on the banks of San Antonio Creek, a mile in vertical depth below. It is hard on shoe-leather, but it furnishes the thrills.

Magnificent is the term which rightly describes the view from the top of Mount San Antonio. Far below on the south lies the Orange Empire, looking the giant landscape that it is, with its checkerboard network of groves and highways drawn in fine detail. On the north is the Mojave Desert stretching away to the eastward until its limits are lost in the haze, and beyond whose northerly edge rise the Tehachapi Mountains, the frayed-out end of the Sierra Nevada. If the atmosphere is clear enough, the Mount Whitney group is plainly discernible. Eastward, the San Bernardino Mountains, with San Gorgonio's old gray head rising from their midst, seem very near at hand; while toward the west the view takes in the jumble of lesser mountains and wider valleys that fill the space between San Antonio and the sea. Offshore stands Catalina, the "Magic Isle."

With all its attractions, however, the Mount San Antonio trip is not altogether satisfying to many of the Sierra Club. The place is too near civilization. The "outlanders" are too numerous. The trail is too crowded. There is no camp-fire, for the night is spent at Camp Baldy. The dance-pavilion is a poor substitute for the night-gathering around the big log fire in the open. There are altogether too many reminders of the daily grind of life. So it is that many of us come away from there with our longings not fully satisfied.

But San Gorgonio and San Jacinto—ah, they are different!

There we get away from the crowd, the automobile, the telephone, and the newspaper. It may be for a few days only—it seems like a *very* few days—but it is *away*. We can forget everything, *do* forget everything many of us, and revel in the joy of being free among the mountains!

On our last trip to San Gorgonio, the club camped two nights at Barton Flats, on the north slope of the mountain, in the upper Santa Ana Valley. The forest there reminds me of the moist woods of the Sierra Nevada. There are great silver firs, immense incense cedars, and sugars and yellow pines in profusion, among which Barton Creek seeks a tortuous course, spreading here and there into separate rills, only to unite again farther down the slope. The spot is a greenery, a fernery, a forest retreat! But I'm afraid it is not for long; an automobile road now runs into its very depths!

The third night was spent at Dry Lake, eight miles nearer the mountain-top than Barton Flats, from which it is reached by an indifferent, elusive trail—indeed, so elusive in places as to allow its would-be followers to wander off through marshy *ciénagas*, or to wander along rocky ridges, which nearly all of us proceeded to do, each after his own separate, independent, and self-willed opinion of what was the best way. So in due time—that is to say, from about noon until after nightfall—we all arrived at the camp among the lodgepole pines on the shore of Dry Lake, some three thousand feet below the crown of old San Gorgonio.

When Dry Lake was given its name it no doubt deserved it; but a levee thrown up across its outlet has converted it into a lake in fact as well as in name. Its setting is beautiful, lying as it does at the foot of the last steep rise of San Gorgonio and solidly framed by the forest of lodgepole pines. The long crowning ridge of the mountain rises on the southeast, across the lake from where our camp was located, and the picture it made in the evening glow, with its reflection in the lake, became one of the most vivid and enduring images that are stored away in my memory. Patches of snow on the long gray ridge and the dark-green forest belt at the base furnished contrasts to further enhance the scene. A pink-flowered knotweed, growing in solid masses, covered large patches of the shallower

SIERRA CLUB CAMP AMONG THE BIG PINES AT
BARTON FLATS, SAN GORGONIO
MOUNTAINS
Photo by F. M. Fultz

LOOKING ACROSS
OF THE UPPER SANTA ANA RIVER
SHOWING MOUNT SAN GABRIEL
Photo by F. M. Fultz



SIERRA CLUB CAMP AMONG THE BIG PINES AT
HARTON PLATS, SAN BERNARDINO
MOUNTAINS

Photo by F. M. Paulz



PLATE XXIV

LOOKING ACROSS THE THREE-TWO'S SAND-FOOT GORGE
OF THE UPPER SAN GABRIEL RIVER
Showing Mount San Antonio

Photo by F. M. Paulz



DOG LAKE AND THE BARE RIDGE OF MOUNT SAN GORGONIO

Photo by F. M. Fultz



LODGEPOLE PINE FOREST IN APRIL

On the west slope of Mount San Gorgonio

Photo by F. M. Fultz

parts of the lake and gave to the surface a ruddy tinge, as if the water were reflecting a sunset sky.

There is no trail from Dry Lake to the top of San Gorgonio—only a trace, where someone in the years gone by once passed, leaving behind him an occasional “duck” to guide those who might come after. Most of the way is rough, and much of it so steep that when we tried to stand erect we literally found ourselves staring the slope in the face. The slope, too, was in such a mobile condition that we seemed to slip backward two steps for each one we took forward. But perseverance finally landed us on that long bare ridge which has given the mountain the familiar name of “Grayback.” Some say the name came from the color of the ridge, which even from far away always looks cold and gray. Others say it was the shape of the ridge—fancied by some to resemble a certain plebeian insect of ill-repute—that suggested the homely name. As for me, I am poetical enough to pin my faith to the former proposition. But I do not like the use of the name at all. The good old saintly one of San Gorgonio, given by the Spanish a century and a half ago, is of a dignity which carries with it a respect and reverence more in accord with the spirit in which all true mountain-lovers approach the eternal hills.

While I am talking on the use of names, let me put in a plea for old San Antonio also. Let us discourage the use of “Old Baldy,” by which this mountain is apt to be called by the general run of persons.

To return to the Sierra Club on San Gorgonio. We descended the mountain by the Vivian Trail, as the Government route to the summit is called. The lower end of this trail is in Mill Creek Cañon, some three miles above Forest Home. Nearly all of the crowd were caught in one of those summer thunderstorms which now and then break around these high mountains of the south. They were thoroughly drenched by the tremendous downpour that lasted for a good part of an hour. When the storm passed and the sky had cleared again, the top of San Gorgonio was a dazzling white, as we viewed it from Forest Home, eight or ten miles away in an air-line. While the club members were getting a terrific drenching on the downward trail, it had been snowing on the summit of the mountain!

On the occasion of another trip to the region, taken early in April, several members of the Sierra Club climbed San Geronio by the Vivian Trail when a large part of the way was under snow. They found the weather conditions of wind and snow so severe at the top that it was with the utmost difficulty they made their way along the summit ridge to the cairn at the highest point.

We of the Sierra Club in the south consider the trip to Mount San Jacinto the *ne plus ultra* of our outings. It is one of the hardest—all best things are hardest to obtain—yet the crowd usually numbers about fifty, and the entire trip is almost always made without anyone falling behind. (This statement applies to persons, and not to the pack-train carrying dunnage and commissary, which on one occasion got lost, leaving the crowd supperless and bedless one cold night far up on the mountain—for all the world like an experience I once went through on one of the "big trips" up in the Kern region.) The full account of the trip just parenthetically alluded to would make an interesting article by itself. Here I shall have to forego more than the briefest outline.

The first night's camp was in Strawberry Valley, one of the most beautiful mountain parks in the world, surrounded by a two-thousand-foot mountain wall, bordered and sprinkled over with Coulter pines, and set with a succession of flowers that runs to a glorious finish in the fall with a display of goldenrod and scarlet-hued *zauschnerias*. The next day we followed the long trail that goes by the way of Tahquitz Peak, then on to the sky-perched valley of the same name. There two or three whispering rills gather, joining their forces in an aster-embroidered mountain meadow where some lover of solitude, in a year now long away in the past, took up a homestead, built a small cabin, and lived the simple life. The early settler has not lived there for many years, and the cabin is now tumbling to its fall; but the little mountain park is still there in its primitive beauty, the asters still sprinkle the meadow, and the murmuring rills still gather for their journey to the desert sands.

Beyond Tahquitz Valley the trail led us through a forest of yellow and sugar pines, incense cedars, and white firs, with very little or no grade for a few miles. Then it started upward, and

we began to climb; and the farther we went, the more we climbed. Then it struck a swampy meadow, just for the sake of losing itself, which it promptly did, after the fashion of high mountain trails, and succeeded in leading most of us astray and scattering us over a large area of soft, boggy land that stood half-way on edge along the main ridge which finally culminates in the highest point of San Jacinto. But all things come to an end sometime, even boggy trails, and at length we found ourselves gathered into the night's camp, only an hour or so below the peak.

The peak was climbed early the next morning—by many in time to see the sunrise over the desert. The return trip from the base-camp was by way of Round Valley, which is a mountain-meadow opening in the lodgepole-pine forest; then on past Hidden Lake, stopping there long enough to make the short side-trip to the Lookout, where the wall of the mountain rises sheer from sea-level in the Colorado Desert, over eight thousand feet below. No other lookout ledge, save only at the Grand Cañon of the Colorado, has ever so impressed me.

The last night's camp was still high up on the mountain, near Tahquitz Creek, not far from where it begins its long plunge for the desert. And the last day's tramp was down this same eastern flank, carrying us in a few short hours from the cool, temperate conditions of the high mountain parks to the tropical climate of the sea-level desert.

Southern California has no national park. There is need of one. True, she has an interest in the parks farther up the State, but she needs one within her own borders and for her very own. And she has spots a-plenty still within the Government domain that possess the right conditions for great national playgrounds. Some of these have been put forward at various times for the honor; but to my way of thinking, the most ideal one of them all has never been mentioned in this connection. This one is the San Jacinto Mountains, and I hereby nominate this group, along with a goodly portion of the adjoining desert, for dedication by our Government as a national park.

AN ASCENT OF MOUNT HUMPHREYS

By G. R. BUNN



OUR party of ten left Los Angeles July 11, 1919, and on the 14th bade farewell to roads and civilization at the Hogue Ranch, marked on the United States Geological Survey map as Ross Ranch. A little more than two weeks of joyous wanderings, enhanced by good fishing and glorious scenery, found us camped near the timber-line on Piute Creek ready for a dash at our chief objective. In addition to knowledge gained on a trip in 1913 and information from old SIERRA CLUB BULLETINS and other printed matter, we had seized every opportunity to examine our mountain from different vantage-points. There were the distant glimpses from Muir Pass, from Mount Hilgard, and from the unnamed pass between Lake Italy and Granite Park. Then came the more intimate views from Pilot Knob, from the trail near Piute Pass, and from various parts of Humphrey Basin. After collocating all the facts obtained by reading and by personal inspection of our objective, the opinion as to the best line of attack seemed to be unanimous, and when the climbing party left camp on August 3d at 7 A. M., with beautiful weather to encourage them, it was with high hopes that a few hours later the topmost pinnacle of Mount Humphreys would be beneath their feet.

Both the reputation of the mountain and our own visual examination of its tremendous precipices had led us to determine that its ascent was too dangerous to be undertaken by the ladies of the party, no matter how good mountaineers they might be. Viewed in the light of that day's later experiences, it seems certain that this judgment was wise. There were but five of us who finally set out for the conquest of the peak.

An inspection of the United States Geological Survey map will reveal a chain of small lakes lying directly at the base of the main peak, and our route, after crossing a low ridge, led us between the two uppermost of these lakes. Here a fan of talus stretches down nearly to the uppermost lake, and up this we



PLATE XXVI.

MOUNT HUMPHEYS AND DESOLATION LAKE

Photo by G. R. Baum



HALF DOME
Showing the saddle up which the trail leads

took our way toward the apex where it abuts against the foot of the abrupt wall. Luckily, this talus-slope is of comparatively small extent, as on account of its sliding tendencies it is one of the most tiresome and aggravating features of the whole climb. This successfully surmounted, the choice of two lines of advance presented themselves—one, a steep chimney leading all the way to the top of the main ridge; the other, the broken and jagged rocks separating this chimney from another gully more to the left. On account of some previous experience, the writer was chosen to select the route and lead the party from this point. Because of the greater liability of loose and sliding rocks in the course of a chimney and the consequent danger to the climbers in the rear, the more rugged and broken route over the rocks to the left was the one determined upon. From here on, that we might have no difficulty in retracing our line of ascent, we carefully and continuously monumented our route. While the monuments erected were rather hastily constructed, it is probable that enough of them will remain to be of material assistance to anyone who attempts the ascent in 1920.

From the time of leaving the head of the talus-pile to that of reaching the saddle on the main ridge just at the northwest base of the main peak no particular difficulties were encountered. The climbing was rugged and somewhat strenuous, but perfectly feasible to anyone of sound wind and heart and good muscles. No effort was made to follow any particular line or the most direct route. Plenty of time was taken at intervals to rest and enjoy the wild and ever-widening panorama. Some care was taken to choose lines of advance that would mean the least danger to the rear guard from loosened and falling rocks. This caused us to zigzag back and forth across chimneys and over separating ridges of rocks to other chimneys until, at 11:30 A. M., we suddenly emerged from a gully and found ourselves overlooking Owens Valley.

Standing here on the saddle, we found the wind, especially on the side toward Humphrey Basin, to be decidedly chilly; but donning our sweaters we curled up on the sunny side of a rock overlooking the glacier at the head of McGee Creek on the Owens Valley side and ate our lunch in perfect comfort.

The view from the saddle, though exceedingly grand, was

somewhat circumscribed by the main peak and the rocky pinnacle which bounded the saddle in the other direction. So, after a short period of rest, we set ourselves to investigate the possibility of ways and means to transport ourselves to the topmost spire, which towered some six or seven hundred feet above us. There, if we could but reach it, we might regale our eyes with an almost unbounded panorama of rugged mountains. At the first sight our chances of reaching the top appeared to be very doubtful. A rocky depression indented the main ridge toward the summit, but this grew rapidly steeper until, as some one said, it was so perpendicular that it leaned over backward. However, that appeared to be our only chance; so we tackled it, hoping to solve each difficulty as it presented itself, and determined not to turn back until we had investigated every possibility. For a little it was easy enough; then the bottom of the depression became a mere crevice and almost perpendicular, and elbows and knees were called into play. A fat man would have surely stuck fast; but as the leader was the heaviest of the party, the others knew if he could wriggle through they could follow. Finally the crevice petered out entirely, and we faced a blank wall of rock with no ledges or crevices to offer holds for feet or hands. However, investigation revealed a slight ledge traversing to the right, which, if successfully negotiated, seemed to lead to further possibilities above. Just here two of the party, who were married men, decided that their responsibilities toward their respective families outweighed their desire to set foot on the topmost pinnacle of Mount Humphreys, and they turned back. Their decision was doubtless wise, as the difficulties rather increased from that point. By the exercise of caution the before-mentioned ledge was safely passed by the leader, only to have new and as difficult problems present themselves at each successive advance. But by traversing again and again on narrow ledges where the missing of a finger-hold or the slip of a foot might mean a permanent resting-place some two thousand feet below; by utilizing cracks and projecting knobs to lift oneself by sheer muscular power; by crawling along knife-edges where it looked equally easy to fall a few thousand feet to the glacier on one side or into a lake even farther below in Humphrey Basin on the other—by these

and a few other expedients, as well as keeping a cool head and steady nerves, the last difficulty was overcome, and at 1 P. M. the leader, followed a few moments later by the other two members of the party, set foot on the highest point of Mount Humphreys, 13,972 feet above sea-level.

The weather was calm, beautiful, and warm. There was hardly a cloud in the sky, and sweaters were a superfluity. The view was magnificent. Far across decreasing billows of mountains to westward the San Joaquin Valley shimmered under a hot sun. Near at hand on the other side, apparently just at our feet, Owens Valley lay spread out like a map with its roads, cities, and cultivated fields. Aside from these two features of the scene, the world was a wilderness of mountains. From Banner and Ritter on the north to the helmet shape of Mount Whitney on the south, we identified landmark after landmark, monuments of past successes and beckoning finger-posts to future conquests. Very little snow was visible, owing to the light fall the preceding winter, and even the smallest lakes and ponds were free from ice. Of lakes and lakelets we counted nearly two hundred and then lost count.

The summit of the peak is so limited in extent that there is hardly room for more than a half-dozen people to congregate there at a time without danger of falling off. There is not even room for a monument, and the Sierra Club cylinder lay out in plain sight on a flat rock. One of our first cares was to examine the club register, which we found in fine condition; but it was a matter of surprise to ascertain, according to the entries therein, that the summit had been attained by but one climber since the register was placed there by Messrs. Hutchinson in 1904. This ascent was made in 1917 by a prospector, Dan Samardich. The writer could not but feel a thrill of satisfaction to learn that he was the first club member to set foot on the summit since the register was placed there fifteen years earlier.

One hour was passed on the peak, a few photographs taken, and then with regret we were compelled to set out on our downward way. Excepting the first few hundred feet, which were even more difficult of descent than of ascent, the return trip was uneventful. With the aid of our monuments we made good time in returning, and by 5 P. M. we were at camp.

GROVE KARL GILBERT

By E. C. ANDREWS, OF SYDNEY, N. S. WALES



THE note presented herewith for the readers of the SIERRA CLUB BULLETIN is written by one who was associated intimately with Dr. Gilbert during a period of two months only, but who was associated with him for years by means of correspondence dealing with the subjects of erosion by means of currents, waves, rivers, glaciers, and wind. The note deals in the first place with Gilbert the scientist and in the second place with Gilbert the man.

It is probable in the highest degree that Dr. Gilbert will be placed among the world's greatest geologists and geographers by future workers, if indeed he is not placed there already by geologists. His great success lay in his intimate communion with Nature coupled with his wonderful powers both of observation and reflection. His geological and geographical works show him as one who was continually making sound observations of natural phenomena, making inferences or deductions therefrom, and then checking these inferences by reference to Nature again. In this way he advanced through inference and hypothesis toward Truth.

His methods were much like those of Darwin, the patient yet brilliant observer, the one who sought facts rather than sensational novelties. His quest was Truth first and Truth last. Fame and position counted little with him compared with exactness of observation and deduction. There were twenty-four hours in the day only. He chose God before Mammon.

John Muir was another grand student of Nature. In his case, however, the reflective faculty was not so evident as in the case of Gilbert; the temperament was more sentimental, perhaps more spiritual, the imagination was more poetical, less disciplined than Gilbert's. Each, however, was a master; each was a lover of Nature; each found the truth in his own way; the one felt the unity of Nature; the other sought to co-ordinate natural phenomena.

Dr. Gilbert was the first to announce the fact that many fire-rocks had ascended from hearths or centers beneath the earth's surface and had forced themselves between sheets of rocks separated by a zone of relative weakness. As the rock-sheets were forced apart differentially by the ascending column of molten rock, the latter occupied the space so formed and took on the form of huge lenses, to which Gilbert gave the name of laccolites, or laccoliths, meaning *lake rocks*. These he saw first in the Henry Mountains. Gilbert became famous in England by reason of this discovery; but to the writer he confided the belief that Englishmen praised him for very little, inasmuch as "the laccolite was there," said he, "for the seeing." He it was, also, who appreciated first the fact that areas such as the high Wasatch Plateau, or Range, near Provo, and the relatively low plain around Salt Lake, had formed a continuous surface at one time, but were now broken or "faulted" blocks, one portion of the plateau or plain sinking and the other rising, or both rising, but one to a greater altitude than the other. This enormous "Wasatch Fault" he actually understood from a mere glimpse out of a window of the transcontinental train. This led to his principle of the physiographical criteria of faulting. Later on he was enabled to prove the fault origin of the plateau from physiographical considerations.

As with the laccolite theory, so also with the idea of the "Physiographic Fault"; Gilbert thought it was an easy thing to understand. To which the writer responded: "It is a strange thing that, of all the geologists who had seen the laccolites, and who had traveled in the transcontinental trains, no one had understood these things until Gilbert announced them!" It is also true that years afterward Gilbert had difficulty in making European geologists see these "faults," even when he had shown them the criteria of faulting on the *spot*. At the present time, however, his work on faults of this type is universally accepted by scientists of eminence.

A great principle enunciated by Gilbert in 1882-1888 was that concerning the action of streams and waves. He showed that streams and waves accomplish most of their cutting or erosive work during violent floods or storms. This point had not been understood before, although certain great hydraulic en-

gineers had hinted at the idea, but only in an uncertain way. In letters to the writer Gilbert considered that "all great engineers had a sort of intuitive knowledge of the principle."

In 1898 Gilbert accompanied the Harriman Expedition to Alaska, and there he appreciated the action of glaciers in excavating the peculiar land forms known as fiords, sounds, *cwm*s (coombs), cirques, corries, overdeepened lake basins, and U-shaped valleys in cross section. Although he had come to this idea quite independently, nevertheless Henry Gannett had already in 1898-1899 announced the principle, while W. M. Davis and others had also appreciated the facts independently, from a study of Norway, New Zealand, and other places, between 1899 and 1902.

Gilbert also made valuable contributions to the theory of isostasy, first announced by C. E. Dutton—namely, that unit cylinders of earth material, considered at right angles to the earth's surface, whether in the high mountains or in the deep oceanic areas, are approximately equal in weight down to a depth which is approximately one hundred miles below the earth's surface.

But his greatest work is his "Analysis of Land Sculpture," in which he gives a clear statement of the manner in which the weather and the streams combine to carve the lands into the shapes as we see them now, whether as fretted alpine peak, as scarred volcanic pile, as deeply dissected plateau or rolling upland, as foothill slopes, or as coastal or inland plain of accumulation.

This is a masterpiece, a classic, like Hutton's work and Playfair's "Illustrations." It is only fair to state here that Hutton and Playfair, about one hundred and twenty years ago, had evolved a similar scheme. They lived before their time, and their classics lay unheeded in libraries almost inaccessible to workers. Gilbert rediscovered their principles and went beyond them. Later, upon learning of their work, his modesty led him to award Hutton most of the credit. Naturally, Gilbert was a great admirer of Hutton, and could never understand why the Englishmen had neglected their great compatriots.

During recent years Gilbert had made a detailed and valuable

study of the action and transporting power of streams generally, with specific applications to the question of damage done by hydraulic sluicing in California.

His works will live long after him, because, like Darwin, he aimed at the truth and nothing but the truth, and was not to be drawn aside by a premature announcement of something novel and startling. Every new idea was mercilessly checked by later observation and forced to agree with its context.

His love and admiration for Darwin, Huxley, Tyndall, Hutton, Playfair, Faraday, and other great Englishmen, and his avowed admiration of the charming style of English writing and clearness of thought exemplified in the works of these masters illustrates the type of man here considered.

As a boy Gilbert was not at all robust, and, according to his statement to the writer, he scarcely, if ever indeed, attended school on that account. His father, desirous of his mental development, gave him the following problem to solve: "A loaf is in the form of a hemisphere, and the crust is of uniform thickness, the volume of the crust being equal to that of the crumb. What are the relative thicknesses of the crust and the crumb?" The boy solved the problem unaided, and his father forecast that he might be of use in the world after all!

Dr. Gilbert was a big-hearted man, and he made a hobby of assisting lads of intellectual promise to receive a good education. He was always on the look-out, however, for signs of strength or weakness of character in such students, in his friends and acquaintance. Thus one day, when an acquaintance made a tremendous and resonant sneeze in his company, he exclaimed: "Bravo! I have waited long to understand whether he really had elements of greatness in him. He has sneezed greatly. I am satisfied. He will do something of great use yet!"

He was extremely sensitive despite his grandeur of character. He hated to be saluted familiarly as "Doc" or even as "Doctor." At Shaver, the lumber camp beyond Fresno, our party stayed for two days awaiting the mule-teams from Yosemite and Calaveras way. Gilbert was leader. An oily-faced individual showed us our rooms in a shack, and then said, "I'll thank you, Doc, for a half for the bed!" The half was paid.

Next morning, we all filed in, with about fifty workmen, to the breakfast table. "How much is the meal?" said Dr. Gilbert to the same oily one in charge at the door. "A quarter, Doc!" said the oily one. "Here it is," said the Doctor. "Oh! no, Doc," said the proprietor; "after the meal will do. I am at the door, but I dashed well can't sit up all night at each window and door of the shack looking for flitters!" Gilbert pressed his point. The proprietor was obdurate. He took money *after* the meal; not for anyone would he change the rule. Several Chinamen waited upon us at table. We had plenty of food—mush, milk, fish, meat, cheese, jam, puddings, sugar, tea, coffee—but only one plate, one knife, one fork, one spoon, and one cup, of very great thickness, without a handle, for each man. "They have these cups so thick and without handles," whispered Gilbert, "so that they can be washed with a hose, or be used as missiles in a fight across the table."

Gilbert was hard of hearing on the starboard side, and the oily one, standing at his port side, told us there was only "one man, one plate," as that was the Chinese law at Shaver. Gilbert did not hear this and helped himself plentifully to mush, sugar, and milk, ate only a little, and then asked the silent Chinese boy to bring a clean plate for meat. There was instantly a chattering among the Chinese. A man had dared to ask for another plate! The writer scented trouble. Gilbert, like *Oliver Twist*, still asked for more. Not a man looked across the table at us. The oily one came and whispered mysteriously in his port ear: "Doc, this is as much as my job is worth. The Chinks won't serve two plates. Don't ask for one. If you get it, *all* the boys will want one, and then *all* the Chinks will go. Do you get me?" "I don't know what you are saying," said Dr. Gilbert, "but I want you to hurry up with a plate." There was great consternation now, but I said: "He says there will be a clear out if you persist in asking for more plates. The Chinese don't stand for two plates." "Oh! why does he not speak up? Pass the meat"—and into the thick mass of mush and milk he emptied the fried meat and never mentioned the matter again. He was very much upset, however, at being beaten twice by the oily one and at being greeted familiarly as "Doc" into the bargain.

His loyalty to his friends and to his work was an inspiration to all those who had the privilege of living and working with him. Night after night after Matcho the mule, and leader of the pack-team, had been tethered so as to avoid disaster among the team from the dreaded loco-weed, Gilbert would have the pine logs piled high, and in the blaze therefrom he would read to us stories of Clarence King. He would tell us of "Fossil Eye" Walcott, of Shaler, and of others. He admired Shaler for his personality. "Shaler," said he, "was fond of dichotomous classifications. Thus in one of our trips together we came to a common sort of public house in the country. A large and fierce dog came straight at us. In the fraction of time while the ferocious animal was rushing at us Shaler said, 'All men belong to two classes—namely, men whom dogs bite and men whom dogs don't bite. I belong to the smaller group.' He thereupon called to the beast, which at once fawned upon him! As we washed our hands in the common bowl at the same public house Shaler noticed a dirty roller-towel doing duty for all comers. 'Gilbert,' said he, 'there are two kinds of men, men who wipe on the outside of the towel and men who wipe on the inside. I belong to the minority group—namely, those who wipe on the inside.'"

Willard D. Johnson was one of our party on the Sierran trip of July, August, and September, 1908. Gilbert was a staunch friend of Johnson's, and he declared that Johnson was one of the keenest intellects and one of the finest natures that he had ever known. In a letter to the writer in February, 1918, shortly before his death, Gilbert set out briefly the facts of Johnson's sad case of sickness and death, and straightway stated his opinion of Johnson's great worth both as geologist, and as a *man*.

Johnson revered Gilbert, but confided to the writer his fears that Gilbert thought of him only as a child or boy. "As a youth I followed Gilbert into the field without instruments," he said. "Gilbert gave me a task of geological surveying. I explained that I was without instruments. 'Make them,' said Gilbert. And I had to do so."

Gilbert had a deep affection also for the Le Contes. In the Yosemite he spoke of Le Conte and of Whitney, and through-

out the San Joaquin trip he showed the younger Le Conte's "monumented trails" with great affection.

Gilbert's pastimes were mainly intellectual. Night and day on the Sierran trip he was continuously indulging in intellectual exercises, except when reading of King's exploits, or telling of Muir in the Sierra and in Alaska, of Harriman in Alaska, or of Wheeler, Dutton, Walcott, Shaler, Davis, and others.

He taught the writer the name of every tree and of every flowering plant in the Sierra seen during the trip. . . . How he praised the writer for seeing *Salix arctica* first in catkin near the Mono Pass, with the plant a quarter of an inch high only, and the catkin two to three inches high! How he made the writer creep along cautiously so as to show him the water-ouzel, the woodpecker, the coyote, the cougar, and the other denizens of the forest and the glacial lakes! On the trip to Wawona and the giant trees he searched long to find the web of the spider which forms its home in the shape of a paraboloid of revolution.

Yet with all his love for plants he told the writer that systematic botany did not appear to broaden the mind so much as the study of physics, chemistry, and engineering. "Where are the names in botany such as Kelvin, J. J. Thomson, Newton, d'Alembert, Galileo, and so on?" To which I answered, "What about Darwin, Huxley, Asa Gray, Bentham, Hooker?" "Yes," he said, "they were great men because they wrote on the geographical distribution of plants, not so much because they were systematists." In all his work one could see the mind working like that of Powell, always dealing with the massive, the sublime.

If a horse or mule fell out on the trip, or a halt were made for a meal, Gilbert would ask at once for a "problem" to be given him to solve. The writer's stock of questions on maxima and minima, on astronomy, on motion round curves, on inertia, on flywheels, on nodes of curves, on physics, were soon used up, as Gilbert could see through a problem very quickly. In return he would always propound a difficult problem, such as that of the loaf mentioned earlier, of the ages of Mary and Ann, etc. At night, in the sleeping-bags, he would teach us the names of all the principal stars, constellations, and so on.

When riding along through the forest, we continually had recourse to a game of his proposing. Thus Gilbert would say a piece of poetry, from the classics, nursery rhymes, or from his own imagination. He would stop at any word, whereupon the writer was supposed to say another poem, or fragment of poem, commencing with the word last mentioned.

Thus the writer had been eating one meal only a day, and taking a course of pepsin for gastritis upon the commencement of the Sierran trip. The trip soon caused the three-meal plan to be revived. Dr. Gilbert noted the change and said:

"An antipodal Fletcherite faster,
Of appetite proudly the master,
Hiked and scrambled for weeks
Amid cañons and peaks,
And now at his meals he's a laster.
Yes, he sticks to his seat like a plaster,
But . . . "

Here the writer had to continue and said:

"But takes pepsin to ward off disaster."

This, of course, was not what Dr. Gilbert had expected, but it amused him very much.

One fragment which the writer worked off in turn on the Doctor may not be out of place here: . . . "like flowers in the scented grove," said the Doctor, stopping abruptly. Then the writer responded:

"Grove Gilbert was our captain bold
Of Henry Mountain fame.
He lit his torch with lac-o-lite,
And straightway made his name!
His many "Faults" were mighty ones,
No common, garden brand.
His Wasatch "slip" in Mormon land
Is known on every hand."

In February, 1918, Dr. Gilbert wrote to the writer concerning his desire to do "something which might assist the cause of the Allies," but he regretted his inability to do anything "of value." He therefore proposed to keep on with scientific work which might be of value in post-war adjustments.

This was near the end. In 1908 he had told the writer that he

could not expect to live more than ten years, because of some forecast by an eminent man as to seventy-five years being his limit of age. It came as no surprise to hear that this master in the realm of geology and physiography, this teacher revered and beloved by his disciples, this man of the broad sympathies and of the great heart, had passed away shortly after believing that at a time when his maximum effort was needed in the cause of humanity he had passed his zenith and had entered instead upon his days of "splendid decadence."

*Geological Survey, Department of Mines,
Sydney, N. S. W.*

*The mind opens with the enlarging day.
It is said the sand-hills of the desert under the noon-
day sun emit strange sounds; that the rocky valleys are vocal;
the primeval forest speaks in its depths; hollow ocean sends
a muttering to the becalmed vessel; and up in the
mountains the bound words are set loose. Of
old times the huntsmen in our own woods
met the noon-day spirit under
the leafy canopy.*

RICHARD JEFFERIES

STUDIES IN THE SIERRA*

By JOHN MUIR

NO. VI.—FORMATION OF SOILS

NATURE has plowed the Sierra flanks more than a mile deep through lava, slate, and granite, thus giving rise to a most lavish abundance of fruitful soils. The various methods of detachment of soil-fragments from the solid rocks have been already considered in the foregoing studies on glacial and post-glacial denudation. It now remains to study the formation of the variously eroded fragments into beds available for the uses of vegetable life.

If all the soils that now mantle the Sierra flanks were spread out in one sheet of uniform thickness, it would measure only a few feet in depth, and its entire removal would not appreciably affect the configuration of any portion of the range. The largest beds rarely exceed a hundred feet in average thickness, and a very considerable proportion of the whole surface is naked. But we have seen that glaciers alone have ground the west flank of the range into soil to a depth of more than a mile, without taking into account the work of other soil-producing agents, as rains, avalanches, torrents, earthquakes, etc. It appears, therefore, that not the one-thousandth part of the whole quantity of soil eroded from the range since the beginning of the glacial epoch is now left upon its flanks.

The cause of this comparative scantiness of the Sierra soil-beds will be readily apprehended when we reflect that the glacier, which is the chief soil-producing agent, no sooner detaches a soil-fragment than it begins to carry it away. During the long glacial winter, soil-material was poured from the range as from a fountain, borne outward by the mighty currents of the ice-sheet to be deposited in its terminal moraines. The only one of these ancient ice-sheet moraines which has re-

* Reprinted from the *Overland Monthly* of December, 1874. The author's revisions and corrections have been incorporated from a copy of the article found among his papers.—THE EDITORS.

tained its principal characteristics unaltered down to the present time is that magnificent belt of soil upon which all the majestic forests of the Sierra are growing. It stretches along the west flank of the range like a smooth-flowing ribbon, waving compliantly up and down over a thousand hills and hollows, at an elevation of from four to seven thousand feet above the level of the sea. In some places it is more than a hundred feet deep and twenty miles wide, but it is irregular as a sun-wasted snow-wreath both in width and in depth, on account of the configuration of the surface upon which it rests, and the varying thickness and declivity of the ice-sheet at the period of its deposition. The long weathering and the multitude of storm-washings to which it has been subjected have made its outlines still more indefinite and variable. Furthermore, its continuity is interrupted at intervals of fifteen or twenty miles by the river cañons which cross it nearly at right angles. For, at the period of the deposition of the main soil-belt as a terminal moraine of the ice-sheet, long finger-like glaciers extended down every one of these cañons, thus effectually preventing the continuance of the main terminal moraine across the cañon channels.

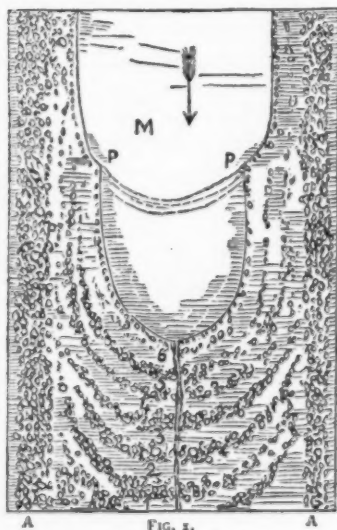


FIG. 1.

The method of the deposition of broad belts of terminal-moraine soil will be made plain by reference to Figure 1, which represents a deposit of this kind lying at the foot of Moraine Lake, made by the Bloody Cañon glacier in its recession toward the period of its extinction. A A are the main lateral moraines extending from the jaws of the cañon out into the Mono Plain; 1, 2, 3, 4, 5, 6 are concentric belts of terminal-moraine soil deposited by the glacier in its retreat.

These soil-belts, or fur-

rows, are twenty or thirty yards apart. After belt number 1 was laid down, the glacier evidently withdrew at a faster rate, until a change of climate as regards heat or cold, or the occurrence of a cluster of snowier years, checked its backward motion sufficiently to afford it time to deposit belt number 2, and so on; the speed of the dying glacier's retreat being increased and diminished in rhythmic alternations of frost and thaw, sunshine and snow, all of which found beautiful and enduring expression in its ridged moraines. The promontories P P are portions of a terminal soil-belt, part of which is covered by the lake.

Similar fields of corrugated moraine matter occur farther down, marking lingering and fluctuating periods in the recession of the glacier similar to the series we have been studying. Now, it is evident that if, instead of thus dying a lingering death, the glacier had melted suddenly while it extended into the Mono plain, these wide soil-fields could not have been made. Neither could the grand soil-belt of the western flank have existed if the ice-sheet had melted in one immense thaw while it extended as a seamless mantle over all the western flank. Fortunately for Sierra vegetation and the life dependent upon it, this was not the case; instead of disappearing suddenly, like a sun-stricken cloud, it withdrew from the base of the great soil-belt upward, in that magnificently deliberate way so characteristic of nature—adding belt to belt in beautiful order over lofty plateaus and rolling hills and valleys, wherever soil could be made to lie.

Winds and rains, acting throughout the ample centuries, smooth rough glacial soils like harrows and rollers. But this culture is carried on at an infinitely slow rate, as we measure time. Comparing the several moraine-fields of Bloody Cañon, we observe that the ridged concentric structure (Fig. 1) becomes gradually less distinct the farther we proceed out into the plain, just as the plow-ridges in a farmer's field become less distinct the more they are harrowed. Now, the difference in time between the deposition of contiguous moraine-fields in Bloody Cañon is probably thousands of years, yet the difference as regards smoothness and freshness of aspect corresponding to this difference in time is in some instances scarcely discernible. In

the field represented in Figure 1 these leveling operations may be studied to excellent advantage. The furrows between the several ridges are leisurely filled up by the inblowing and washing of leaves and the finer material of the adjacent ridges. As the weathering of the surface boulders goes on, the crumbling material which falls from them collects about their bases, thus tending to bury them, and produce that smoothness of surface which characterizes all the more ancient moraine-fields of the Sierra. The great forest soil-belt of the west flank has not been hitherto recognized as a moraine at all, because not only is it so immensely extended that general views of it can not be easily obtained, but it has been weathered until the greater portion of its surface presents as smooth an appearance as a farmer's wheat-field.

It may be urged against the morainal origin of the forest belt that its sections exposed by freshet streams present a quite different appearance from similar sections of more recent moraine-beds unmistakably such; but careful inspection shows the same gradual transition from the boulder roughness of the one to the crumbled earthiness of the other that we have already traced between the superficial roughness and smoothness of moraines according to age.

Under certain conditions moraine boulders decompose more rapidly beneath than upon the surface. Almost every section of the forest belt presents specimens in every stage of decay, and, because those that are water-rounded and polished are more enduring than others, they occur in comparatively greater abundance as the soil becomes more ancient. The position of the soil-belt is given in the ideal cross-section of the range (Fig. 2)¹. *Its upper limit nearly coincides with the edge of a comparatively level bench, A B, extending back to the summit peaks.* Upon this lofty, gently inclined bed the waning ice-sheet lay nearly motionless, shallowing simultaneously across its whole breadth, and finally broke up into distinct ice-streams which occupied the present river cañons. These have left their lateral moraines in the form of long branching ridges of soil, several miles apart, extending from the summit ice-wombs down to the main soil-belt, into which they blend and disappear. But if the ice-sheet had maintained its continuity to the

very end of the glacial epoch, soil would evidently have been laid down in one continuous bed all the way back to the summit, because under these conditions every portion of the surface in succession would have been loaded with terminal moraine-belts pressed one against the other like plow-ridges. Under the conditions which prevailed toward the close of the great winter, the separate glaciers as well as the ice-sheet shallowed, became torpid, and died away simultaneously throughout all this upper region; no terminal moraines are therefore to be met until we reach those of the small residual glaciers which took shelter in the loftiest and coolest shadows of the summit peaks.

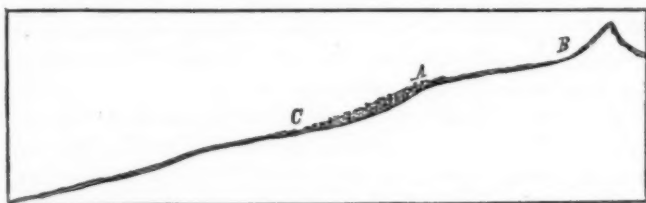


FIG. 2.

Nor will this state of things be wondered at, when we consider how slight is the difference in elevation, and consequently in climate, between the upper and lower limits (A and B, Fig. 2) of this bare alpine bench, as compared with that of the slope (C A) beneath it, upon which the soil-belt lies.

The effect of shadows in determining the formation, size, and distribution of glacial soil-beds must not be overlooked. When the seasons grew warm and the long crooked glaciers were driven from the sun-beaten summit bench, thousands of small residual glaciers, from half a mile to two or three miles in length, lingered on through many a century in the shelter of frosty shadows. Accordingly, we find the moraines of these hiding glaciers in the highest and coolest recesses, shaped and measured with strict reference to their adjacent shadows. A considerable number of these interesting shadow-moraines are still in process of formation, presenting a raw and rubbish-like appearance, as if the boulders, mud, and sand of which they are composed had been newly mined from the mountain's flank, and dumped loosely from a car. Ancient shadow-moraines,

delightfully gardenized and forested, occur in all deep Yosemite cañons trending in an east and west direction; but their first forms are so heavily obscured by thousands of years of weathering that their shadow-glacial origin would scarcely be suspected.

In addition to these broad zones and fields and regularly deposited moraine ridges, glacial soil occurs in isolated strips and patches upon the wildest and most unlikely places—aloft on jutting crags, and along narrow horizontal benches ranged one above another, on sheer-fronted precipices, wherever the strong and gentle glaciers could get a boulder to lie. To these inaccessible soil-beds companies of pines and alp-loving flowers have found their way, and formed themselves into waving fringes and rosettes, whose beauty is strikingly relieved upon the massive ice-sculptured walls.

Nothing in the history of glacial soil-beds seems more remarkable than their durability in the forms in which they were first laid down. The wild violence of mountain storms would lead one to fancy that every moraine would be swept from plateau and ridge in less than a dozen seasons, yet we find those of the upper half of the range scarcely altered by the tear and wear of thousands of years. Those of the lower half are far more ancient, and their material has evidently been shifted and reformed until their original characteristics are almost entirely lost.

These fresh glacier-formed soils are subject to modifications of various kinds. After the coarse, unbolted moraine soils derived from granite, slate, and lava have been well watered and snow-pressed, they are admirably adapted for the ordinary food and anchorage of coniferous trees, but further manipulation is required to fit them for special grove and garden purposes. The first and most general action to which they are subjected is that of slow atmospheric decomposition, which mellows and smooths them for the reception of blooming robes of undershrubs and grasses, and up to a certain point augments their capacity for the support of pines and firs. Streams of rain and melting snow rank next in importance as modifiers of glacial soils. Powerful torrents waste and change the most compact beds with great rapidity, but the work done by small rain-cur-

rents and low-voiced brooks is very much less than is vaguely supposed. The brook which drains the south flank of the Clouds' Rest ridge, above Yosemite Valley, in making its way southward to join the Nevada Creek, is deflected to the west by the right lateral moraine of the ancient Nevada glacier, and compelled to creep and feel its way along the outside of the moraine as far as to where it is caught between the moraine and an escarpment which advances from the Clouds' Rest crest. When halted here, it spread into a pool, and rose until it was able to effect its escape over the lowest portion of the barrier. Now, this stream, which in ordinary stages is about five feet wide and a foot deep, seems to have flowed unfailingly in one channel throughout all the long post-glacial centuries, but the only erosion the moraine has suffered is the removal of sand, mud, and some of the smaller boulders, while the large stones, jammed into a kind of wall, are merely polished by the friction of the stream, and bid fair to last tens of thousands of years. The permanence of soils depends more upon their position and mechanical structure than upon their composition. Coarse porous moraine matter permits rains and melting snows to percolate unimpeded, while muddy and impermeable beds are washed and wasted on the surface.

Snow avalanches more resemble glaciers in their methods of soil formation and distribution than any other of the post-glacial agents. The century avalanche sweeps down all the trees that chance to stand in its path, together with soils of every kind, mixing all together without reference to the size of their component fragments. Most of the uprooted trees are deposited in lateral windrows, heads downward, piled upon each other, and tucked snugly in alongside the clearing; while a few are carried down into the valley on the snout of the avalanche, and deposited with stones, leaves, and burs, in a kind of terminal moraine.

The soil accumulations of annual avalanches are still more moraine-like in form, and frequently attain a depth of from forty to fifty feet. They are composed of mud, sand, coarse granules, and rough angular blocks, avalanched from the mountain side, and sometimes water-washed pebbles also, derived from the channels of streams.

Thus, the largest of the Clouds' Rest avalanches, in rushing down their magnificent pathway of nearly a mile in vertical depth, on their arrival at the Tenaya Creek (Fig. 3) dash across its channel and up the opposite bank to a height of more than a hundred feet, pushing all the pebbles and boulders of the stream up with them. Spring freshets bring down a fresh supply of pebbles and boulders from year to year, which the avalanches patiently add to their moraine, until in a few thousand

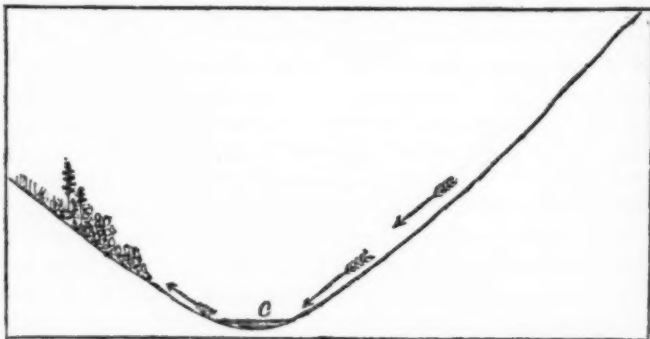


FIG. 3.

years these washed pebbles form a considerable proportion of the mass. Trees over a hundred years old occur upon the upper portions of some of these avalanche-beds, showing that no avalanche of sufficient power to disturb them had occurred since they began to grow. The lower portions of these beds are, on the contrary, in a raw formative condition, and about as plantless as the shining boulder-beds in the bottoms of rivers.

Again, stone avalanches have their share in depositing soil. The observer among beetling Yosemite cliffs occasionally sees a single boulder eight or ten feet in diameter whizzing down the sky like a comet with a tail of dust two thousand feet long. When these huge soil-grains strike among other boulders at the end of their course, they make a sound deeper and heavier than thunder; the ground trembles, and stone-spray is whirled and spattered like water-spray at the foot of a fall.

The crushed and pounded soil-beds to which avalanches of this kind give rise seem excellently well adapted to the growth of forest trees, but few of them are sufficiently matured to be

available, and the trees that venture upon them are in constant danger of their lives. These unplanted beds occur most commonly at the base of cliffs intersected by feldspathic veins, the decomposition of which causes the downfall of additional material from year to year. On the contrary, the rougher and far more important soil-beds resulting from earthquake avalanches are formed almost instantaneously, without being subsequently augmented in any appreciable degree for centuries. The trees, therefore, and various shrubs and flowers which find them tolerable or congenial dwelling-places soon take possession of them, and soothe their rugged features with a mantle of waving verdure.

At first thought no one would suppose that in a tumultuous pellmell down-crash of rifted rocks any specialization could be accomplished in their deposition. Both the suddenness and the violence of the action would seem to preclude the possibility of the formation of any deposit more orderly than a battered rubbish-heap. Every atom, however, whether of the slow glacier or swift avalanche, is inspired and directed by law. The larger blocks, because they are heavier in proportion to the amount of surface they present to the impeding air, bound out farther; and, because obstructions of surface irregularities have less effect upon larger blocks, they also *roll* farther on the bottom of the valley. The small granules and sand-grains slip and roll close to the cliff, and come to rest on the top of the talus, while the main mass of the talus is perfectly graduated between these extremes. Besides this graduation accomplished in a vertical and forward direction, beautiful sections are frequently made in a horizontal and lateral direction, as illustrated in Figure 4. A B is a kind of natural trough or spout near the base of the cliff, directed obliquely downward, into

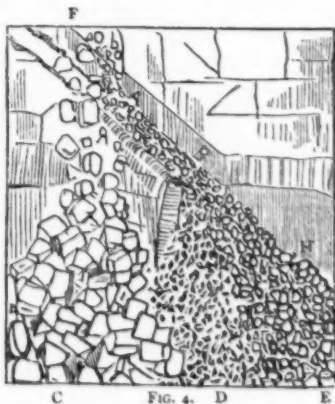


FIG. 4.

which a portion of the avalanche-stream, F, falls, and is spouted to the left of its original course. Because the larger boulders composing the spouted portion of the current move faster, their momentum carries them farther toward H, giving rise to the talus E, while the finer material is deposited at D. Again, the blocks sufficiently large to bound out beyond the deflecting spout form the rough talus C, while the smallest fragments of all—namely, the fine dust derived from chafing—float out far beyond, and settle in thin films silently as dew.

In portions of cañon walls where diagonal cleavage is developed, inclines such as A B (Fig. 5) are common. If two boulders in falling from the heights above should strike glancingly at A, the greater mass or more favorable form of boulder B might cause it to bound sufficiently far to reach the second incline, which would carry it toward D; while the smaller boulder, C, falling short, might fall under the guidance of a

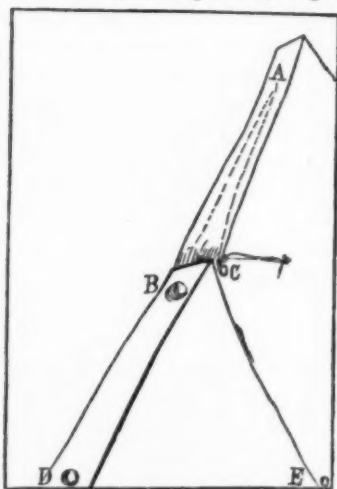


FIG. 5.

third incline, and be shed off toward E, the two boulders finally coming to rest a hundred yards or more apart. By these means the most delicate decompositions of stone-torrents are effected, the various resulting soils being delivered at different shoots and spouts, like the bran, shorts, and fine flour of a grist-mill. The ages of the oldest trees growing upon these soils furnish data by which some approximation to the time of their formation may be made.

The first post-glacial earthquake sufficiently severe to produce large avalanches occurred at least three centuries ago, and no other of equal power has occurred since. By this earthquake alone, thousands of acres of noble soil-beds were suddenly and simultaneously deposited throughout all the deep cañons of the range. Though

thus hurled into existence at a single effort, they are the most changeless and indestructible soil formations in the Sierra. Excepting those which were launched directly into the channels of rivers, scarcely one of their wedged and locked boulders has been moved since the day of their creation. In striking contrast with these terrible demonstrations of mechanical energy, made in the deposition of earthquake soils, is the silent and motionless transformation of solid granite into loose fine soil-beds by oozing water and the tranquil play of the atmosphere. Beds eight or ten feet deep occur on Mounts Watkins and El Capitan, on the edge of the Yosemite Valley, where the decomposition had been effected so calmly that the physical structure presents no conspicuous change; the quartz, mica, and hornblende retaining the same relative positions as when solid, yet so perfectly disintegrated that, like sand, it may be cut into with a spade. But these unmoved beds created on the spot are of relatively small extent, and as yet play an insignificant part in the support of Sierra vegetation. The main body of the smaller soil-fragments, weathered loose by the atmosphere, are transported and redeposited by winds and rains. Magnificent wind-rivers sweep the high Sierra, carrying large quantities of sand, dust, and mica flakes, besides larger fragments in the form of rough grains. These are distributed in smooth undulating fields and patches, adapted to the wants of the dwarf *Pinus albicaulis* and many of the most precious of Sierra shrubs and flowers. Many of the smaller alpine wind-beds are exceedingly beautiful, nestling in the lee of rough beaten rocks, their edges waved and embroidered, and their surfaces delicately dented and ruffled like the garden-plats of children. During the post-glacial eruptions of the volcanoes of the Mono basin, winds distributed showers of cinders and ashes upon all the soil-beds of the adjacent Sierra. Hundreds of square miles of area are thus sprinkled on the upper basins of the San Joaquin, Merced, and Tuolumne rivers; the copiousness of the cinder-showers increasing the nearer the Mono volcanoes are approached as a center.

The numerous domes and castellated rocks distributed over the ridges and divides of the middle region abound in garnet, tourmaline, quartz, mica, and feldspar crystals, which, as the

mass of the rocks decompose, are set free and fall in minute avalanches, and gradually accumulate until they come to form belts of crystalline soil. In some instances, the various crystals occur only here and there, sprinkled in the gray gravel like daisies in a sod; but in others, half or more of the encircling talus seems to be made up of crystals, tilted at all angles, and laid open to the sun. And whether in the mild flush of morning or evening, or in the dazzling white of high noon, they manifest themselves as the most exquisitely beautiful of all the soil-beds in the range.

In the hollows and levels we find soil-beds that have been compounded and laid down by streams of water. But these may be regarded as little more than reformations of glacial deposits; for the quantity of soil material eroded from solid rock by post-glacial agents is as yet hardly appreciable. Water-beds present a wide range of variability both in size and structure. Some of the smallest, each sustaining a tuft or two of grass, have scarcely a larger area than the flower-plats of gardens; while others are miles in extent, and support luxuriant groves of pine trees two hundred feet in height. Some are composed of mud and sand-grains, others of ponderous boulders, according to the power of the depositing current and the character of the material that chanced to lie in its way.

Glaciers are admirably calculated for the general distribution of soils in consequence of their rigidity and independence of minor inequalities of surface. Streams of water, on the contrary, are fitted only for special work. Glaciers give soil to high and low places almost alike; water-currents are dispensers of special blessings, constantly tending to make the ridges poorer and the valleys richer. Glaciers mingle all kinds of materials together, mud particles and rock blocks a hundred feet in diameter; water, whether in oozing currents or passionate torrents, constantly discriminates both with regard to size and shape of material, and acts as a series of sieves for its separation and transportation.

Glacial mud is the finest mountain meal ground for any purpose, and its transportation into the still water of lakes, where it is deposited in layers of clay, was the first work that the young post-glacial streams of the Sierra were called upon to

do. Upon the clay-beds thus created avalanches frequently pile tangled masses of tree-trunks, mingled with burs and leaves and rocky *detritus* scraped from the mountain side. Other layers of mud are deposited in turn, together with freshet-washings of sand and gravel. This goes on for centuries from season to season, until at length the basin is filled and gradually becomes drier. At first, the soil is fit only for sedges and willows, then for grasses and pine-trees. This, with minor local modifications, is the mode of creation of the so-called flat and meadow soil so abundantly distributed over all parts of the range.

Genuine bogs in this period of Sierra history occur only in shallow alpine basins, where the climate is sufficiently cool for the growth of sphagnum, and where the surrounding topographical conditions are such that they are safe, even in the most copious rains and thaws, from the action of flood-currents capable of carrying stones and sand, but where the water supply is nevertheless sufficiently constant and abundant for the growth of sphagnum and a few other plants equally fond of cold water. These dying from year to year—ever dying beneath and living above—gradually give rise to those rich spongy peat-soils that are the grateful abodes of so many of the most delightful of alpine plants.

Beds of sloping bog-soil, that seem to hang like ribbons on cool mountain sides, are originated by the fall of trees in the paths of small creeks and rills, in the same climates with level bogs. The interlaced trunks and branches obstruct the feeble streams and dissipate them into oozing webs and stagnant pools. Sphagnum speedily discovers and takes possession of them, absorbing every pool and driblet into its spongy stems, and at length covers the muddy ground and every log and branch with its rich rounded bosses.

Here the attentive observer is sure to ask the question, Are the fallen trees more abundant in bogs than elsewhere in the surrounding forest?—and if so, then, why? We *do* find the fallen trees in far greater abundance in sloping bogs, and the cause is clearly explained by young illustrative bogs in process of formation. In the first place, a few chance trees decay and fall in such a manner as to dam the stream and flood the roots

of other trees. Every tree so flooded dies, decays, and falls. Thus, the so-called chance-falling of a few causes the fall of many, which form a network, in the meshes of which the entangled moisture is distributed with a considerable degree of uniformity, causing the resulting bog to be evenly inclined, instead of being cast into a succession of irregular terraces, one for each damming log.

Black flat meadow deposits, largely composed of *humus*, are formed in lake basins that have reached the last stage of filling up. The black vegetable matter is derived from rushes and sedges decaying in shallow water for long periods. It is not essential that these beds be constantly covered with water during their deposition, but only that they be subject to frequent inundations and remain sufficiently moist through the driest seasons for the growth of sedges. They must, moreover, be exempt from the action of overflowing flood-currents strong enough to move gravel and sand. But no matter how advantageous may be the situation of these *humus* beds, their edges are incessantly encroached upon, making their final burial beneath drier mineral formations inevitable. This obliterating action is going on at an accelerated rate on account of the increasing quantity of transportable material rain-streams find in their way. For thousands of years subsequent to the close of the ice-winter, a large proportion of the Sierra presented a bare, polished surface, and the streams that flowed over it came down into the meadows about as empty-handed as if their courses had lain over clean glass. But when at length the glacial hard-finish was weathered off, disintegration went on at a greatly accelerated speed, and every stream found all the carrying work it could do.

Bogs die also, in accordance with beautiful laws. Their lower limit constantly rises as the range grows older. The snow-line is not a more trustworthy exponent of climate than the bog-line is of the age of the regions where it occurs, dating from the end of the ice epoch.

Besides bogs, meadows, and sandy flats, water constructs soil-beds with washed pebbles, cobblestones, and large boulders. The former class of beds are made deliberately by tranquil currents; the latter by freshets, caused by the melting of the win-

ter snow, severe rain-storms, and by floods of exceptional power, produced by rare combinations of causes, which in the Sierra occur only once in hundreds of years. So vast is the difference between the transporting power of rivers in their ordinary every-day condition and the same rivers in loud-booming flood, that no definite gradation exists between their level silt-beds and rugged boulder deltas. The ordinary power of Sierra streams to transport the material of boulder soils is very much overestimated. Throughout the greater portion of their channels they can not, in ordinary stages of water, move pebbles with which a child might play; while in the sublime energy of flood they toss forward boulders tons in weight without any apparent effort. The roughly imbricated flood-beds so commonly found at the mouths of narrow gorges and valleys are the highest expressions of torrential energy with which I am acquainted. At some time before the occurrence of the grand soil-producing earthquake, thousands of magnificent boulder-beds were simultaneously hurried into existence by one noble flood. These ancient boulder and cobble beds are distributed throughout the deep valleys and basins of the range between latitude 39° and $36^{\circ} 30'$; how much farther I am unable to say. They are now mostly overgrown with groves of oak and pine, and have as yet suffered very little change. Their distinguishing characteristics are, therefore, easily readable, and show that the sublime outburst of mechanical energy developed in their creation was rivaled only in the instantaneous deposition of the grand earthquake beds.

Notwithstanding the many august implements employed as modifiers and reformers of soils, the glacier is the only great producer. Had the ice-sheet melted suddenly, leaving the flanks of the Sierra soilless, her far-famed forests would have had no existence. Numerous groves and thickets would undoubtedly have established themselves on lake and avalanche beds, and many a fair flower and shrub would have found food and a dwelling-place in weathered nooks and crevices. Yet the range, as a whole, would seem comparatively naked. The tattered alpine fringe of the Sierra forest, composed of *Pinus flexilis* and *P. aristate*, oftentimes ascends stormy mountain flanks above the upper limit of moraines, upon lean, crumbling

rock; but when they have the opportunity, these little alpine pines show that they know well the difference between rich, mealy moraines and their ordinary meager fare. The yellow pine is also a hardy rock-climber, and can live on wind and snow, but it assembles in forests and attains noble dimensions only upon nutritious moraines; while the sugar pine and the two silver firs, which form so important a part of the grand forest belt, can scarcely maintain life upon bald rocks in any form, and reach full development only in the best moraine beds, no matter what the elevation may be. The mass of the Sierra forests indicates the extent and position of the moraine-beds far more accurately than it does lines of climate. No matter how advantageous the conditions of temperature and moisture, forests can not exist without soil, and Sierra soils have been laid down upon the solid rock. Accordingly, we find luxuriant forests two hundred feet high terminated abruptly by bald glacier-polished pavements.

Man also is dependent upon the bounty of the ice for the broad fields of fertile soil upon which his wheat and apples grow. The wide plains extending along the base of the range on both sides are mostly reformations of morainal *detritus* variously sorted and intermixed. The valleys of the Owens, Walker, and Carson rivers have younger soils than those of the Sacramento and San Joaquin—that is, those of the former valleys are of more recent origin, and are less changed by post-glacial washings and decomposition. All the soil-beds remaining upon the Sierra flanks, when comprehended in one view, appear like clouds in a sky half-clear; the main belt extending along the middle, with long branching mountains above it, a web of washed patches beneath, and with specialized meadow and garden flecks everywhere.

When, after the melting of the winter snow, we walk the dry channel of a stream that we love, its beds of pebbles, dams of boulders, its pool-basins and potholes and cascade inclines, suggest all its familiar forms and voices, as if it were present in the full gush of spring. In like manner the various Sierra soil-beds vividly bring before the mind the noble implements employed by nature in their creation. The meadow recalls the still lake, the boulder delta the gray booming torrent, the rug-

ged talus the majestic avalanche, and the moraine reveals the mighty glaciers silently spreading soil upon a thousand mountains. Nor in all these involved operations may we detect the faintest note of disorder; every soil-atom seems to yield enthusiastic obedience to law—boulders and mud-grains moving to music as harmoniously as the far-whirling planets.

SIERRA CLUB

Founded 1892

402 MILLS BUILDING, SAN FRANCISCO, CALIFORNIA

Annual Dues: \$3.00 (first year, \$5.00)

THE PURPOSES OF THE CLUB ARE:

To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada.

JOHN MUIR, President 1892 to 1914

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SIERRA CLUB BULLETIN

Published annually for the members

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EDITORIALS

SAVE THE REDWOODS For many years the great redwood forests of Humboldt and Mendocino counties have been steadily shrinking under the strokes of the lumberman's axe. The time has now come when the lordliest survivors of this giant race are making their last stand in northern California. When they are gone something as incomparable as the Pyramids of Egypt, or the Parthenon of Greece, or the human race itself, will have vanished from the earth forever. For even if young redwoods should be allowed to grow undisturbed for three thousand years, it is doubtful whether climatic conditions will remain such that they can ever again reach the stature and maturity of those which are now being cut down to make grape-stakes.

The Save-the-Redwoods League, an organization of national proportions, has been organized to raise the funds necessary to purchase from private owners a representative forest area of these trees and establish a redwood park. Pending the proposed purchase lumbermen have been induced to stop lumbering operations at points along the highway. But the amount of the funds needed is very large and the money is coming in slowly. The Sierra Club has voted its support to the league, and all our members are urged to join the league and assist in the good work.

The leading article in this number is a brief but moving plea for the saving of the Sequoias, written by John Muir years ago, when the Calaveras Grove was in danger. It seems to have been almost providentially preserved among his papers for the supreme occasion which has now arisen, and is herewith published for the first time. It will be noted that he long ago proposed doing the very thing which is now being attempted after the lapse of years and after thousands of acres of the finest redwood forests have become an ugly fire-bitten ruin. Although the uniqueness and grandeur of these Humboldt County redwoods make them one of the treasured wonders of the world, they are found in California, and we of this State can not escape responsibility either for their destruction or their preservation.

W. F. B.

MEMBER-SHIP Membership in the Sierra Club should not be merely a matter of paying dues and going on outings. The club still has work to do, even though the time is past when we had to fight to justify the very existence of the national parks. Public opinion is back of them now, and their growing popularity vindicates them among the doubting Thomases who ten years ago had nothing but jeers for the "mushy aesthetes" who recommended their preservation. The task of developing the parks is hardly yet begun, and there is much that

we can do in supporting demands for increased appropriations. But, above all, our influence should be thrown toward keeping the parks what they were meant to be—specimens of wild nature used but not “improved” by man. Our members should consider themselves, individually, as so many guardians of the scenery of the west, collectively, as an intelligent mass of public opinion ready to voice its protest when the well-being of the parks or of areas that ought to be parks is in question. We are nearly two thousand strong now. Double our number and we can more than double our work.

M. R. P.

WILD FLOWER DESTRUCTION The President of the American Museum of Natural History asserts that nowhere in the world is Nature being destroyed so rapidly now as in the United States. California especially seems to be the victim of ignorance and selfishness—because she has more than other States to attract the destroyer. Not only are our peerless redwood forests vanishing away before the lumbermen and the grape-stake cutters, but the less spectacular, though not less beautiful, features of her flora are in imminent danger of practical extinction. No shrubs of California are more sightly than the wild currant and the toyon, or Christmas-berry. The one in the springtime, the other in the autumn have made our cañons and hillsides a paradise of color.

But now hordes of automobile vandals, penetrating all roads, are spreading devastation everywhere. They slash, break, cut, and uproot without thought of the future. Unless legal measures are taken speedily, the next generation will know only by hearsay the loveliness of California's tanglebrush roadsides in autumn. An especially preventable kind of destruction is caused by foreigners and others who go out from towns in trucks to strip the roadsides for purely commercial purposes at the holiday season. There is no more reason for allowing this class of persons to enrich itself by robbing a community of its common wealth of beautiful shrubs and plants than in allowing them to smother the songs of robins and meadow-larks by slaughtering them for the market. We punish the latter, as an act of injury to the community, and plant-robbers for the market should be treated in the same manner.

In the best parts of Europe it has long been customary to gauge the level of a country's culture by the foresight with which it has fostered and exercised the natural human instinct for landscape beauty. It was found to be a law that seekers after landscape righteousness speedily had other things added unto them. For tourists willingly brought their tributes of gold to the fortunate cultivators of a beautiful environment. True, we do not build Parthenons and preserve Yosemite and Sequoias for the lining of our purses. Yet no community should overlook the fact that the enhancement of its landscape beauty adds potentially to its material wealth, and that the diminution of its outdoor art values entails a double loss.

W. F. B

"LIGHT-BURNING" Various parties interested in the pine region of the Sierra believe that more thorough forest fire protection would be possible in that region if controlled fires were allowed to run through the forest occasionally at some time other than during the dry season. It is claimed by the advocates of this so-called "light-burning" that absolute fire protection as practiced by the United States Forest Service tends to build up so large an accumulation of inflammable material as to lead to uncontrollable conflagrations.

Through years of hard work the Forest Service has built up a protective system in the Sierra for which the people of California should be deeply grateful. If, after this has been accomplished, there should now be improper publicity regarding the supposed advantages claimed for light-burning, the public might be led to the conclusion that the protective policy of the Forest Service is fundamentally wrong and not to be supported. This would be apt to lead in turn to very serious carelessness and incendiarism by irresponsible people.

The just procedure would seem to be to give the advocates of light-burning every opportunity to prove the merits of their plan; and for everyone to indorse the continuance of the present fire-protective policy on the national forests of California until proof of a better plan is definitely established. Such proof must show among other things that the destruction of young trees and the injuries to older trees caused by light fires are not such serious factors as to preclude the practice of light-burning.

A weakening of the present protective policy, until it is certain that something better can be substituted for it, would probably be a forest calamity of the first magnitude.

W. M.

APPROACHING A MILLION The actual number of visitors to all the national parks last summer considerably exceeded three-quarters of a million! Since this surpasses by nearly seventy per cent the national-park travel of the previous year, it is evident that the cessation of the war has been followed by a remarkable revival of interest in outdoor life. More than a seventh of this travel belongs to California. While this is a gratifying fact, it also creates problems. When six thousand persons were sojourning in Yosemite Valley at one time last summer, all available hotel and camping accommodations were not only overcrowded, but numerous applicants had to be turned away. The post-office and telephone facilities were unable to endure the strain, and much inconvenience resulted. But National Park Director Mather is endeavoring to make provision for enlarged camp and hotel accommodations, and to induce telephone and telegraph companies, as well as the Post Office Department, to provide better service.

W. F. B.

REPORTS OF COMMITTEES

TREASURER'S REPORT

To the Directors of the Sierra Club:

I beg to submit the following report on the finances of the Sierra Club covering the period from January 1, 1919, to January 1, 1920:

Balance cash on hand January 1, 1919.....\$2,414.45

Receipts during the year:

Dues from members	\$4,811.45
M. H. McAllister, Half Dome stairway.....	1,000.00
Advertising in BULLETIN	400.00
Rent of room 403, Mills Building.....	120.00
Part of interest from Permanent Fund.....	42.50
Sale of club pins	31.95
Sale of BULLETINS	20.25
Interest on savings account.....	38.82
Increased valuation War Savings Stamps.....	12.00
Miscellaneous small receipts	29.05
	6,506.02

Expenditures during the year:

\$8,920.47

Rent of rooms 402 and 403, Mills Building.....	\$ 740.00
Salary of Assistant Secretary	960.00
Printing and distribution of BULLETIN	1,666.01
Payments on Half Dome stairway.....	1,000.00
Payments to Southern California Section.....	411.00
Office expenses, postage, and stationery.....	625.99
Commission on advertisements	168.75
Expenses of Le Conte Memorial Lodge.....	107.05
Telephone and telegraph	101.74
Traveling expenses	68.92
Printing and distribution of circulars.....	56.00
Taxes	54.23
Local walks	51.10
Dues to other clubs	43.00
Election expenses	36.75
Lectures and reunions	33.25
Purchase of club pins	14.49
Express	7.11
Telephone at Soda Springs	4.05
Debit and exchange	5.00
Miscellaneous small expenses	7.64

Total expenses.....\$6,162.68

Cash on hand January 1, 1920.....2,757.79

\$8,920.47

Cash on hand distributed as follows:

In the First National Bank	\$ 872.27
In Security Savings Bank	273.81
In Savings Union Bank and Trust Co.....	726.71
In War Savings Stamps	860.00
Cash in Secretary's drawer	25.00

\$2,757.79

Permanent Fund:

Balance in the Fund January 1, 1919.....	\$2,059.74
Three new life memberships	150.00
Part interest on Liberty Bonds.....	41.45
Interest on savings account	3.93

Total in fund.....\$2,255.12

Distributed as follows:

Bond of the Third Liberty Loan.....	\$1,000.00
Bond of the Fourth Liberty Loan.....	1,000.00
Cash in Security Savings Bank.....	255.12

\$2,255.12

The Robert S. Gillett Fund:

Amount of the Fund	\$1,000.00
Invested in bond of the Fifth Liberty Loan.	

JOSEPH N. LE CONTE, Treasurer

SECRETARY'S REPORT

To the Members of the Sierra Club:

Two matters of vital interest are before the club at the present time—the destruction of the finest of our redwood forests, and the menace of sheep-grazing on the western slope of the Sierra Nevada. These issues are discussed elsewhere in the BULLETIN, but too great stress cannot be laid upon their urgency. Another matter of interest is the creation of the Roosevelt (or Greater Sequoia) National Park, which we hope will become an accomplished fact this year. It is to be hoped that the members will support the directors as earnestly as they have in the past whenever action is demanded on these issues.

One of the most important events of the year is the completion of the new Le Conte Memorial Lodge. The expansion of Camp Curry threatened to encroach on the old site of the lodge. The Camp Curry Company offered to rebuild the lodge in a more suitable place without expense to the Sierra Club. The building is a duplicate of the former lodge and more substantially built, and the new site is in many ways more attractive even than the old, giving a magnificent view of Yosemite Falls and Half Dome. It is near the site of the old schoolhouse on the south side of the valley.

The stairway up Half Dome, erected in the name of the club through the generosity of Mr. M. H. McAllister, was completed last summer and has proved to be a great attraction. An account of the trail will be found in "Notes and Correspondence," but we wish again to express our appreciation of this public-spirited action.

One hundred and ninety-eight members participated in the 1919 outing to Tuolumne Meadows, which was a success from every standpoint. The many side-trips, especially the one to Thousand Island Lake and Mount Ritter region, were of unusual interest, and, as the main camp was for the first time moved to the Ten Lake Basin, every member of the outing had the opportunity to visit this little-known section of the park.

Judging by the interest already displayed, the coming outing to the headwaters of the San Joaquin and the Middle Fork of the Kings will be the most popular in the history of the club. Not only are the members interested in visiting an unfamiliar section of the Sierra, but the renewed interest in mountaineering following upon three summers affected by war conditions probably accounts for this unprecedented condition.

Owing doubtless to the war, the club has fallen short of its normal growth during the last two years. The campaign for new members begun at Christmas-time has shown appreciable results, more than two hundred new members having been added within the last two months. The membership is at present 1908; 149 have resigned or been dropped for nonpayment of dues.

Respectfully submitted,

WILLIAM E. COLBY, Secretary

LE CONTE MEMORIAL LODGE, YOSEMITE VALLEY

CUSTODIAN'S REPORT FOR 1919

Upon my arrival, May 15th, I found the lodge incomplete and work on it at a standstill. As soon as the necessary materials arrived and weather permitted, the building was again under way. Through the kindness of Superintendent Lewis and his men, I was able to open the lodge June 5th mid the noise of nail-driving and array of carpenter's tools. The season was shorter than that of former years, but more popular. At all times Le Conte Lodge was crowded with visitors, manifesting considerable interest in "the beautiful stone building" and the man to whom it was dedicated. Twenty-eight hundred names appeared on the register at the time of closing, but fully one-third of the visitors failed to register.

There was constant demand for more books and specimens. The complete works of Joseph Le Conte and John Muir, Indian lore, and studies in flower and bird life, containing colored plates, were the books most frequently called for. A fine innovation was the series

of lectures on subjects pertaining to Yosemite Valley, given by the University of California Extension. The lectures were largely attended and a marked success, and nearly all were held in front of the lodge.

The Sierra Club may well be proud of the new Le Conte Memorial Lodge. It is a beautiful building, in a more beautiful, natural setting. With the ultimate growth of Yosemite Valley will come an increasing need for a library and educational center. It is my idea, born of intimate association with travelers who came to the lodge and with the aims of the Sierra Club, that the latter will see fit to meet this need. It is also my sincere hope that the future will witness a renewed and more unified interest, that Le Conte Lodge may become a living memorial to the man who would have it so.

KATHARINE STOUT,
Pasadena, Cal.

*** As this number of the Bulletin goes to press, an announcement is received of the resignation of Mr. Henry S. Graves, Forester, U. S. Department of Agriculture. The Sierra Club desires to express its appreciation of the exceptional service which Mr. Graves, one of the Club's Honorary Vice-Presidents, has rendered to the Nation during the past ten years while he has been in charge of all National Forests throughout the United States.*

NOTES AND CORRESPONDENCE

MOUNT RAINIER IN WINTER

In July the flanks of Mount Rainier are a fairyland of wild flowers. Everywhere the pale stars of the erythroniums, the white cassiopebells, the lavender rays of asters jostle heads so closely that the little folk themselves could not pass without rubbing shoulders with them. In January Rainier is another fairyland—a white silence of snows sweeping from the lower forests up to the glaciers. The smooth slopes are broken only by dark-green shadings in the frondlike, sculptured masses of the snow-encrusted firs and hemlocks; by icicle-hung streams, or the bare branches of willows showing red and yellow against the white.

The midwinter five-day outing of the Seattle Mountaineers to Paradise Park is as important an event in their year as the summer outing itself. In spite of rain or snow, of flood or blizzard, the new year is always begun as all new years should begin, up as near heaven as the limitations of men and mountains will allow.

We were a hundred and twenty-five this year, Mountaineers for the most part, of course, but with a sprinkling of Mazamas and Sierra Club as well. In spite of the severe cold of the preceding weeks, we encountered no snow at all on the first afternoon's walk from Ashford to Longmire's Springs. The weather was clear and not cold. Mists closed in next morning, but little rain fell. The trail was practically free from snow until we were past Narada Falls. Even then it was so well crusted that we did not have to put on snowshoes.

The inn at Paradise, which was turned over to us to run for ourselves, was stocked with provisions sent in before the snow. We had our own cooks and were our own waiters—took care of the rooms and kept up the fires ourselves. The great living-room, buttressed with silvery logs cut from the old Ghost Forest near the Mazama camp of 1905, has a huge fireplace at either end. With a piano and a phonograph for dance music, with stunts staged by our talent and a daily "newspaper" to read aloud, the long evenings sped away like magic.

Snowshoeing began in a snowstorm. White slopes rounded away into the clouds till one could not say where earth ended and sky began. All morning on our sky-line trail up to the head of Sluiskin Fall the snow sifted us with white, making us look like cohorts of Santa Claus. Coasting, tobogganing, or ski-running that day was like parachuting down into the bottomless pit, for the final destination was hidden in fog. The ski-runners had rather the best of it, for they were not further blinded by the clouds of powdered snow that the toboggans raised. Over crests and into holes, through woods or into wood-

piles, the tobogganers took their headlong course, undismayed, even though spilled, until night called a halt.

The fog lifted that evening and for the rest of our trip the weather was perfect. From dawn on December 31, we were out of doors. Both Rainier and the Tatoosh Range shone dazzlingly clear. The tops of the dead trees glittered with ice. The snow was dry and sparkling, flying out from the higher crests of the mountain in shining banners. Thin wisps of ice-cloud were forming constantly in the sky. For a minute only they would float high above us, then, like a puff of smoke, they were gone.

Many parties started out—to climb to the saddle of Pinnacle Peak, to ramble toward the Cowlitz Glacier, to climb to McClure Rock, or even as far as Camp Muir. Up near timber-line was a still more exquisite world. St. Helens, Adams, and Hood shone high on the southern horizon. Puget Sound was a sea of fog, with promontories of forested hills charting a new shore-line. Cornices of snow cut the sky. Struggling timber-line trees, wholly encased in ice, stood stiffly upright, like branches of coral. White-capped rocks suggested half-revealed sculptured forms, as if a Rodin of the frost country had been busy there.

Ski-runners were in their element. The snow was in perfect condition, and the long runs down through that glorious sunshine must have been entrancing. Three young girls climbed with us almost to timber-line and shot down abreast, seeming to skim the surface of the snow without touching it, as a gull skims the crests and hollows of the sea. At sunset Rainier wore a crown of rainbow color. All the near-by slopes were pale green, banded with violet shadows. Western skies glowed with orange and yellow, eastern showed dull rose and pearly gray. Then came bright moonlight.

The annual vaudeville kept actors and audience both occupied until midnight. We filed out into the moonlight then, and, facing the mountain, sang the good-night song of the Mountaineers. The notes of "Taps" ringing out over that great white amphitheater made a rarely beautiful ceremony of the passing of the old year.

MARION RANDALL PARSONS

BIRD SANCTUARIES ENDANGERED

Berkeley, November 3, 1919

HON. FRANKLIN K. LANE, Secretary of the Interior,
Washington, D. C.

My dear Secretary Lane: You will recall that in August, 1908, the late Theodore Roosevelt created by presidential proclamation the Klamath and Malheur lakes reservations for the protection of wild birds. It has come to our notice that, through ill-advised plans of reclamation, the water supply from the Klamath River has been cut

off from the Lower Klamath Lake by means of a dike. In consequence, the lake has become an ugly alkaline waste, without any corresponding benefit to anyone. Mr. A. P. Lewis, Director of the Reclamation Service, has written Senator Chamberlain that a recent investigation of the marshlands around Lower Klamath Lake has failed to disclose positive evidence of their value for agricultural purposes. He writes that "very little conclusive evidence can be found as to the agricultural values of the lands around Lower Klamath Lake."

May I inquire, for the information of our membership, why the Reclamation Service should not be directed to open the dikes and let the water back into Lower Klamath Lake? According to our present information, this act of cutting off the water looks like a very useless piece of destruction, and countless birds that had their nesting-sites here are deprived of their breeding-grounds. The purpose for which Theodore Roosevelt established these breeding-grounds is thus annulled. We are further informed that unless speedy relief is found the Malheur Lake Reservation will also become a barren waste.

Regretting the necessity of claiming your attention with this matter, I am,

Sincerely yours,

WILLIAM FREDERIC BADÈ, President

DEPARTMENT OF THE INTERIOR, WASHINGTON

MR. WILLIAM FREDERIC BADÈ, President Sierra Club. Nov. 15, 1919
402 Mills Building, San Francisco, California.

Dear Mr. Badè: I have your letter of November 3 regarding the Oregon bird reserves.

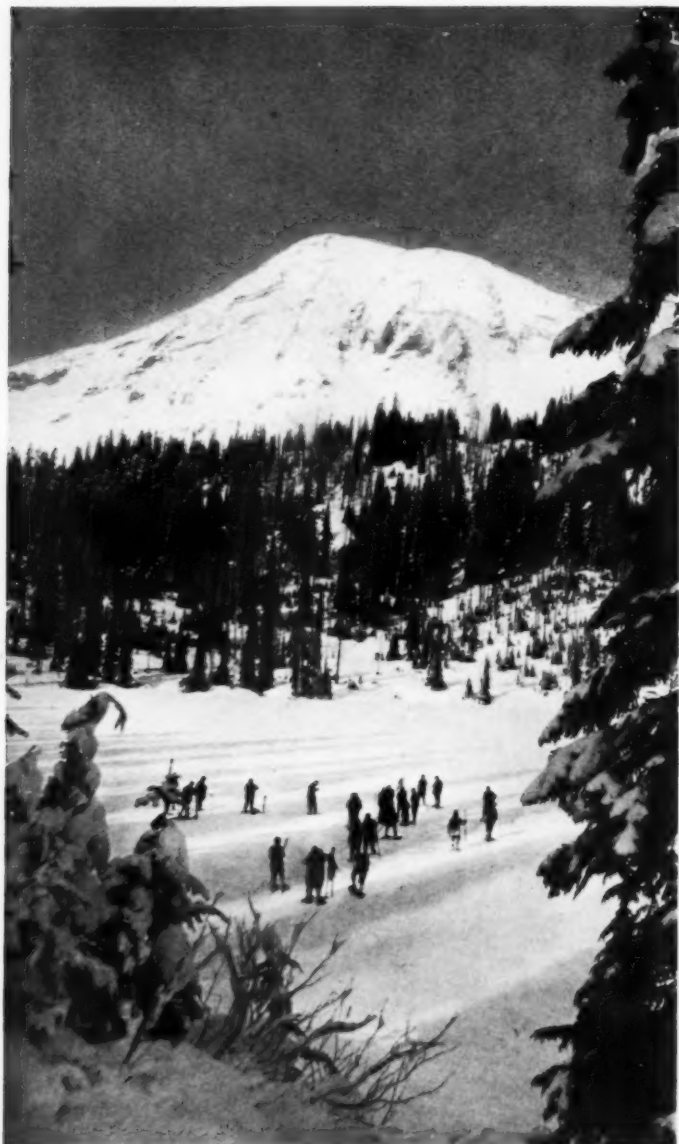
We are greatly interested in these, particularly that at Lower Klamath Lake, which is intimately related to our reclamation work in that vicinity. We are not conducting any operations at Malheur Lake.

At Lower Klamath Lake there is a large bordering area of lands that have been swampy, and there is a considerable sentiment in favor of making these lands available for agricultural operations. This was a part of the plan for the Government reclamation project from the start, and the States of California and Oregon passed special acts to encourage the development, ceding their rights to the United States. Upward of 20,000 acres of such lands in Oregon have been organized as the Klamath Drainage District, and our present arrangements at the lake are the subject of a contract with this district. Under this agreement the United States is secured for the considerable expenditure it has made in the past in the interest of the development of these marsh lands for agriculture. In return, the United States agreed to close the gates, shutting out Klamath River, and to keep them closed. In making the agreement, however, we foresaw that the resulting conditions might make it the wise thing to do to some time reopen the gates, and at our suggestion the district accepted a provision in the agreement under which this may be done.

The district has promptly met its obligations under this contract and



PARADISE PARK, MOUNT RAINIER
Midwinter Outing of the Seattle Mountaineers
Photo by Rodney L. Glisan



MIDWINTER OUTING OF THE SEATTLE MOUNTAINEERS, MOUNT RAINIER
Photo by Rodney L. Glisan

has made two of the payments called for as they fell due. Obviously, the district is entitled to consideration in connection with the suggestion that the gates be reopened, and we have therefore suggested to the State Biologist of Oregon and others interested that they get in touch with the district in order that all concerned may agree as to the best thing to be done.

Cordially yours,

FRANKLIN K. LANE

DEPARTMENT OF AGRICULTURE, WASHINGTON

DR. WILLIAM FREDERIC BADÈ, President Sierra Club,
Berkeley, California.

Nov. 19, 1919

Dear Doctor Badè: Receipt is acknowledged of your letter of November 3 in regard to conditions at Klamath and Malheur lakes reservations in Oregon.

The reservation on Klamath Lake was created in 1908, subject to the use of the area by the Reclamation Service. Whatever reservation we have at this point is necessarily dependent on the reclamation project. The question of opening the dikes and flooding the marshland is solely in charge of the Reclamation Service in the Department of the Interior, and not one directly under the jurisdiction of this department.

Conditions at Malheur Lake are entirely different, but complicated by the fact that much of the land within the reservation boundaries has been alienated. The whole question is receiving careful consideration by the department, and we hope that a solution may be found in a way to safeguard the welfare of the birds and insure the permanence of the reservations.

Very truly yours,

J. R. RIGGS, Acting Secretary

URGENT NEED OF PROTECTION FOR THE TOYON

We are glad to publish this appeal to our membership from Mrs. Bertha M. Rice, the efficient and active secretary of the California Wild Flower Conservation League. The situation has been by no means overdrawn, and we comment upon it editorially:

"California has her game preserves, her State and national parks and forests, and other valuable safeguards of the wild. But there are no laws to protect our beautiful wild flowering shrubs and interesting native plants, many of which have become candidates for extermination. The population of California is increasing with such rapidity and the cultivation of the land in vast areas is so extensive, that, together with the cutting down of forests and forest fires, the irrigation of deserts and drainage of marshes, and the numerous grazing herds, they have all but erased our once bewilderingly beautiful gardens of wild blooms.

"The balance of nature has been sadly disturbed by the rapidity with which the progress of agriculture has changed the fair landscapes of the

Golden State; and the birds and the bees, as well as the flowers, have been having rather a hard time of it. However, it is not so much the inevitable for which we grieve as it is for the thoughtless and unnecessary destruction which now threatens practical extermination of some of the more cherished species of our native flowers.

"You who know the freedom of the high Sierra and the long, winding trails and unfrequented by-paths of the more inaccessible mountains and valleys of California do not realize this so keenly as do they whose lives are more strictly confined to the populous centers of the State.

"The highways and byways of California, which once were adorned with multitudinously tinted and fragrant wild blooming things, are being desolated and marred by the throngs of automobilists and outdoor enthusiasts whose appreciation of beauty is somewhat misdirected, to say the least.

"The toyon, or red-berry, sometimes called wild holly, comes in for more than its share of this sort of vandalism. It is no infrequent sight on Sundays and holidays to see hundreds of automobiles and hikers literally loaded down with branches from these beautiful trees. In their haste to gather and be gone, people frequently cut down the trees, or twist and hack huge branches from their delicate trunks, thus sadly marring their beauty, if not permanently injuring the growth. The beautiful toyon is one of the most attractive and characteristic features of this State, giving a flame of color to our otherwise flowerless roadsides at this season of the year, and aside from sentimental and aesthetic reasons, it should merit protection as a valuable asset to the State's charm and beauty. Tourists never cease to exclaim over and admire its rich and cheerful coloring, which furnishes such a marked contrast to the wintry east. From reports gathered in various localities, we learn that the toyon trees have been almost obliterated in places, and while there seems to be at present an unlimited supply of red berries in the more remote districts, the increased demand for them, and for other wild shrubs, for holiday decorations, threatens in time even these vast reserves. Venders of wild holly and greenery are having shipped to them daily, and in immense quantities, such material from various parts of the State. If this demand increases, and is not regulated, it will, added to the thoughtless extermination carried on by motorists and other unthinking people, practically exterminate some of California's most attractive features.

"We feel that much may be accomplished through a campaign of education and publicity, but enforced measures of regulation have already become necessary in some localities, and wherever necessary the matter should be brought to the attention of supervisors or local magistrates.

"The birds will miss the berries, and the bees will miss the flowers, and the landscape will lack its flame of color to cheer us, and something beautiful will have gone out of our lives—something we cannot regain unless we cherish and protect before too late these fairest and rarest of Nature's offerings."

ASSOCIATED MOUNTAINEERING CLUBS OF NORTH AMERICA

The membership in the Bureau has shown steady increase, and now numbers thirty-three clubs and societies with over 65,000 individual members, as follows:

American Alpine Club, Philadelphia and New York.
American Forestry Association, Washington.
American Game Protective Association, New York.
America Museum of Natural History, New York.
Adirondack Camp & Trail Club, Lake Placid Club, N. Y.
Appalachian Mountain Club, Boston and New York.
Boone and Crockett Club, New York.
British Columbia Mountaineering Club, Vancouver.
Colorado Mountain Club, Denver.
Dominion Parks Branch, Dept. of the Interior, Ottawa.
Field and Forest Club, Boston.
Forest Service, U. S. Dept. of Agriculture, Washington.
Fresh Air Club, New York.
Geographic Society of Chicago.
Geographical Society of Philadelphia.
Green Mountain Club, Rutland, Vermont.
Hawaiian Trail and Mountain Club, Honolulu.
Klahhane Club, Port Angeles, Wash.
Mazamas, Portland, Oregon.
Mountaineers, Seattle and Tacoma.
National Association of Audubon Societies, New York.
National Parks Association, Washington.
National Park Service, U. S. Dept. of the Interior, Washington.
New York Zoological Society, New York.
Palisade Interstate Park Commission, New York.
Prairie Club, Chicago.
Rocky Mountain Climbers Club, Boulder, Colorado.
Sagebrush and Pine Club, Yakima, Wash.
Save-the-Redwoods League, Berkeley, California.
Sierra Club, San Francisco and Los Angeles.
Tramp and Trail Club, New York.
Travel Club of America, New York.
Wild Flower Preservation Society of America, New York.

The common bond uniting all is the desire for the preservation of our finest scenery from commercial ruination. We are working in co-operation with the National Park Service for the creation, development, and protection of our national parks and monuments. In our annual BULLETIN attention is called to what various departments of the Government are doing for the mountaineer and traveler, and mention is made of the claims of scenic regions to become national parks or monuments. When these projects are considered by the Government we present the views of our members, and give publicity to the plans of the Government.

We have encouraged and assisted our clubs in forming and increasing reference and circulating collections of books for the use of their members. We are calling public attention to many important but little-known scenic regions by illustrated magazine articles, and by illustrated lectures before leading clubs and societies.

LEROY JEFFERS, Secretary,
Librarian American Alpine Club,
476 Fifth Ave., New York

THE FOREST SERVICE ON SHEEP-GRAZING IN THE HIGH SIERRA

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE, WASHINGTON

Mr. Wm. F. Badè,
Sierra Club, San Francisco.

November 26, 1919

Dear Mr. Badè: I have received your letter of November 10th in which you transmit a resolution of the directors of the Sierra Club requesting that sheep be excluded from the west slopes of the Sierra Nevada, thereby restoring the policy in force before the war.

Before receiving your letter a policy had already been decided upon along these very lines. During the past summer I myself went into the question of grazing sheep in the high Sierras, and had examinations made by one of my associates from the Washington office in company with representatives of our district office. As a result of this investigation, it is perfectly clear that the exclusion of sheep upon those portions of the forests having high recreation value and used by campers and tourists is desirable.

Instructions have already been issued regarding the discontinuance of issuing permits for sheep-grazing on extensive areas within the Sequoia and Sierra national forests. There are certain other points about which I have not yet issued definite instructions until I secure certain further information. This has to deal not with the ultimate policy, but rather with what steps should be taken during the coming year.

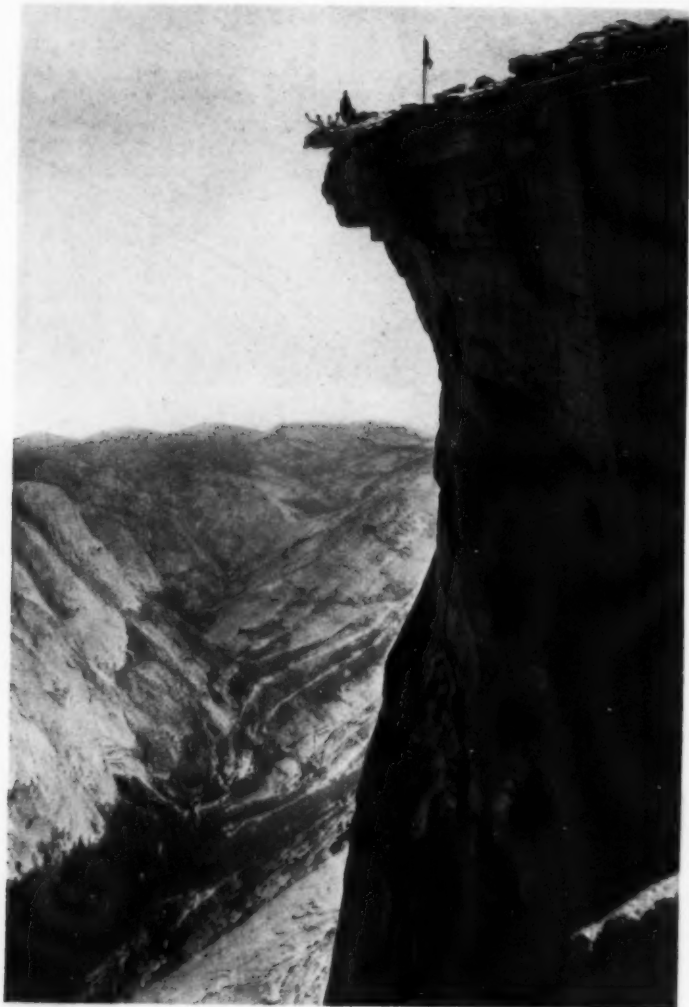
It was my intention to inform the Sierra Club regarding our policy in reference to grazing just as soon as I had reached the point where I could make announcement as to action for the coming year on specific areas. Naturally the first step is in connection with the headwaters of the Kings and Kern rivers and in the basin of Evolution Creek, which is a tributary of the San Joaquin River.

We are also working out plans for setting aside additional areas for camp-grounds and pasture purposes and for such further restrictions of cattle-grazing upon important recreation areas as may be necessary.

We have been handicapped in this work during the past few years on account of conditions arising out of the war. We should now be able



THE NEW CABLE STAIRWAY UP HALF DOME



THE OVERHANG AT THE SUMMIT OF HALF DOME.
Looking east up Tenaya Cañon

to work out a co-ordination of cattle-grazing with the recreation features of the forests in a way to really meet the situation.

It is my desire to co-operate in every way possible with the Sierra Club, and we shall undoubtedly have occasion to seek your co-operation, not only in the matter of recreation in the California forests, but also in questions pertaining to the bringing about of better protection and handling of private forests in the State.

Very sincerely yours,

H. S. GRAVES, Forester

THE HALF DOME TRAIL AND STAIRWAY

Some time ago Mr. M. Hall McAllister, of San Francisco, a member and good friend of the Sierra Club, offered to erect under the Club's auspices a stairway to the summit of Half Dome. This generous offer was accepted by the directors of the club. Permission was granted by the National Park Service and the work was completed last spring. Many visitors to the valley last summer keenly appreciated the opportunity to scale Half Dome in safety, and to see the wonderful views which the summit affords. We are glad to publish the following description of this cable stairway:

"It consists of two sections. The first is on the small dome, or saddle, and consists of a zigzag trail and stone steps covering about six hundred feet. The second section leads up the big incline on the large dome. This slope is of polished granite, about eight hundred feet in length. On this incline, which varies from forty-five to sixty degrees, is placed a double hand-rail of steel cables set into a double line of steel posts thirty inches apart, like those of a steamer's gangplank. These steel posts are set into sockets drilled in the granite every ten feet and at intervals of one hundred feet heavy chains bolted in the rock will help to strengthen the cables or take up any strain on them. When the season is over the caps on the top of each post will be unscrewed, the cables, which are anchored permanently at the top and bottom of the rock, will be lifted out of the posts, and the posts taken from their sockets and stowed away off the rock until spring. It is not thought that the cables lying flat on the rock, and being also held by the safety chains, will be at all disturbed by the spring ice-avalanches.

"The trip can be made as follows: About three hours from the foot of the Vernal Falls Trail on mule-back to the foot of the zigzag trail or 'Rock Stairway'; this ride is up the regular Yosemite Trail to Cloud's Rest, and you rise about thirty-four hundred feet above the valley. Leaving the mules at this point, a walk of about three hundred yards and a rise of six hundred or seven hundred feet take you to the foot of the cable stairway, where a climb of another eight hundred feet, holding to the wire cables, will land you on the summit of Half Dome.

"It is best to wear rubber-soled tennis shoes, as the granite is so smooth and slippery that spiked soles are dangerous. For those who

feel at all timid safety belts are provided, which fasten you to the cables so that it will be impossible to slip and meet with an accident.

"The work was done under the direction of experts from the Sierra Club, and part of the expense shared by the park authorities. The stairway has now been completed and turned over to the Yosemite National Park for the use of the public. The memorial plaque at the foot of the stairway reads:

ERECTED
1919
UNDER THE AUSPICES OF THE
SIERRA CLUB
TO REMEMBER
CAPTAIN GEORGE ANDERSON
WHO FIRST ASCENDED THIS DOME IN
1875

San Francisco, 5 September, 1919

PROF. J. N. LE CONTE, Treasurer Sierra Club,
Berkeley, California.

Dear Sir: In re Half Dome trail and stairway: Much obliged for the check (\$129.52), which balances this account; a receipt for same I have mailed to the Mills Building office.

I find that the whole work has amounted to a value of approximately \$5000, the exact payments being as follows:

Paid by M. Hall McAllister:

Labor, steps and trail on saddle and cable stairway on big incline.....	\$2,903.00	
Material for above.....	833.48	\$3,736.57

Furnished by Yosemite National Park:

(Mr. W. B. Lewis, Superintendent, estimated
amounts, including cost of connecting trail
from Cloud's Rest Trail to Gateway.)

Transportation for entire work.....	\$ 271.00	
Tools and equipment for entire work.....	350.00	621.00

Total.....\$4,357.57

Hoping it will prove a popular and lasting attraction to the Yosemite and redound to the credit of the Sierra Club, I remain

Yours very truly,

M. HALL McALLISTER,
485 California Street

My dear Mr. McAllister:

Berkeley, October 18, 1919

As president of the Sierra Club, it becomes my pleasant duty to convey to you the unanimous and cordial vote of thanks, passed at the

meeting last Saturday, for the Half Dome trail and stairway which you generously caused to be built under the auspices of the club. It is, in the opinion of all, a superb addition to the attractions of the valley for visitors. Personally I hope we may soon have in the *BULLETIN* a series of views taken from Tissiack at different times of the day, season, and atmospheric conditions by first-rate camera artists. I anticipate, too, that soon the ease of access now afforded to that superb outlook will invite meteorological observations in air-currents and electrical phenomena.

Again assuring you of the deep gratitude of the directors of the Sierra Club for your generous gift, I am,

Cordially yours,

Mr. M. Hall McAllister,
485 California Street,
San Francisco, California.

WILLIAM FREDERIC BADÈ

PROF. WILLIAM F. BADÈ,
President Sierra Club.

San Francisco, 23 October, 1919

Dear Professor: Your letter of the 18 October has my attention, and I beg to thank you and the directors of the Sierra Club for your cordial vote of appreciation of the above work.

I can assure you it was a great pleasure to plan and carry out this scheme, of which I had thought for some years, but naturally felt timidity in attempting to undertake a task which might result in failure from financial or physical reasons.

The trail and stairway are, I understand, considered a success by the valley people and have already been enjoyed by a large number of mountain-lovers.

A complete album of photographs is now under way, and as soon as it is finished I hope to send the club several copies for their clubrooms and lodges.

Wishing long life and prosperity to the Sierra Club, and congratulating them on their new president, I remain

Yours very truly,

M. HALL McALLISTER,
485 California Street

THE NATIONAL PARKS ASSOCIATION, 1512 H STREET NORTHWEST
WASHINGTON, D. C.

Dear Mr. Badè:

December 18, 1919

I accept with pleasure your invitation to tell the members of the Sierra Club what the National Parks Association is, and why it should be supported by the membership of Californians who love the parks and the mountains.

It was organized on May 29, 1919, by a committee of which Dr.

Charles D. Walcott, secretary of the Smithsonian Institution, was chairman, to perform necessary work in connection with the national parks which lies outside the province and the function of the National Park Service of the Department of the Interior. It was proposed by the present executive secretary, and its organization was encouraged by Mr. Mather, then assistant to the Secretary of the Interior, as long ago as the autumn of 1916, but war prevented its inception. To-day it is working in hearty partnership with the National Park Service; nevertheless, it is wholly outside of Government control, and is so organized that it can never fall under political influence.

In brief, its purposes are to organize and develop the fullest uses of the national parks for all the people, to take advantage of their opportunities for popular education, to study them and interpret their scenery, to place special emphasis on the conservation of wild life, to make the name National Park a trademark in the competition for the world's travel, and to maintain the ideals of the present enlightened administration of the parks during periods of stress and change which future years may bring about.

The distinction between the functions of the National Park Service and the National Parks Association is clear and definite. The Government promotes access to and between the parks, builds roads and trails within them, protects their wild life, polices them, and, through concessions, provides transportation and hotel accommodations at reasonable prices. In effect, it says to the people: Here are your national parks; now enjoy them. There its functions and appropriations end, and there the National Parks Association begins its function of organizing their popular uses and enjoyment and turning them to the best account of the people and the nation.

In practice the association is already producing incisive results. It has a powerful publicity machine, and is using it. It is leading several strong eastern associations to the rescue of the endangered Yellowstone elk herd. It is assisting the American Bison Society in its movement for the saving of the antelope, now almost extinct. It has promoted the establishment of the first regular course on the meaning of scenery in Columbia University. It has established a strong committee to develop a system of national monuments which shall commemorate the early exploration and history of the nation. It has begun work on sets of national-park lantern-slides for university extension which shall popularize the geology of these regions. It has begun a traveling exhibition of national-park photographic enlargements which shall make plain the creative processes of nature—these to pass from library to library. It has begun to issue popular publications, the very first number of which has attracted the attention of a national scientific society.

The practical reactions of its work upon increasing travel are already so evident that the Denver Chamber of Commerce is carrying out at its own expense a lively campaign throughout Colorado for association

membership, and one of our greatest national railroad systems has volunteered its financial support as soon as railroads become able again to support anything. But the National Parks Association must owe its support, not to business interests, but to a strong membership which is representative of the whole country; for then, and not till then, will it exercise an influence proportionate to its leadership and activity.

Membership is coming fast, but so far not from California. Besides several university professors, the association has not a dozen members from California, the State of four national parks. It ought to have three hundred now and a thousand a year from now.

The impulse which will put California behind this vigorous, virile movement must originate in California. It would seem extremely appropriate for the Sierra Club to become the organizer of that impulse.

I may add that the membership is three dollars a year, the tangible value of which the association hopes to return in its publications of new studies in scenery and wild life, its national-park news bulletins, and its other stated forms of service. The first of the publications, on the new Grand Cañon National Park, contains so many facts new to the public that an effort is being made by educators outside of this association to get it in the hands of geography teachers generally. The publication on Zion Cañon, which was made a national park November 19th last, is still more striking in its assemblage of important facts and relationship hitherto not known to the public. Others planned will carry out the promise of this beginning.

I hope and expect to have California's co-operation in advancing the important work of the National Parks Association. I want it in the form of memberships.

Sincerely,

ROBERT STERLING YARD, Executive Secretary

THE NATURAL HISTORY OF THE SIERRA NEVADA

A COURSE OF INSTRUCTION FOR THE PROSPECTIVE SUMMER VACATIONIST

"Can you read a roadside or a trailside as understandingly and as pleasurably as you read a book?" Believing that our members will wish to enlarge their outdoor interests in the direction of this very pertinent question, we gladly co-operate with the Extension Division of the University of California in announcing the following course of lectures by Dr. Harold C. Bryant, economic ornithologist of the university, beginning March 22 in San Francisco.

Fee for ten lectures, \$5.00. Register for this course at 301 California Hall, Berkeley, or at 140 Kearny Street, San Francisco.

1. The summer vacation: where, when and how to go.
2. Transportation and equipment. Camp equipment (Ellery Arms Co.).
3. Structure and history of the Sierra.

4. Distribution of plant and animal life in California.
5. California trees. Marks for field identification.
6. California wild flowers. Distinctive Sierran wild flowers. Exhibit: Herbarium specimens.
7. Fish and fishing in California.
8. Sierran birds. Marks for field identification. Exhibit: Common Sierran birds.
9. Common mammals of California. Tracks and tracking.
10. Preservation of trophies. Taxidermy; photography.

The following names were omitted from our Service Record last year:

COL. H. C. BENSON, San Francisco.

LIEUT. GEO. H. BARDSLEY (teacher of electricity), Ft. Monroe, Va.
(Artillery).

MRS. EDNA ADAMS BARDSLEY, Red Cross, Fort Monroe, Va.

ERNEST MEIERE, Sgt. Q. M. C., U. S. A., France.

NEILL C. WILSON.

ERNEST MEIERE, Sgt. Q. M. C., U. S. A., France.

ELIZABETH S. HAMMOND, interpreter for Base Hospital 36, U. S. A.

LLOYD H. BERENDSEN, 2d. Lieut. Infantry, U. S. A., Machine Gun Firing
Center, Camp Hancock, Ga.

JOHN BAKEWELL, JR., Red Cross, France.

E. DOROTHY VALANTINE, Army Nurse Corps, Base Hospital 120, France.

FRED MONHOF, Eng. Corps, Naval Reserve, San Pedro.

"LIGHT-BURNING"

An exhaustive paper, entitled "Forest Fire Protection in California," by S. B. Show, contains the following conclusions with respect to "light-burning," or "Piute forestry." We are glad to publish these conclusions because they represent the carefully considered attitude of the Forest Service toward a prevention theory that in practice has proved very destructive to forest reproduction. Mr. Show thus summarizes his conclusions:

1. The methods used by the Forest Service are proved by ten years of actual practice, while those of the controlled burning are, it must be said, largely theory, rather than practice.
2. That in a comprehensive plan for the perpetuation of forests we absolutely cannot disregard the value of reproduction.
3. That the damage which is caused by the practice of light-burning, or controlled burning, to merchantable timber is much greater than the cost of preventing it.

4. That light-burning, an ideal protective measure in theory, in actual practice does not protect.

5. That in the use of fire there are such dangers that the use of the method is open to serious question.

6. That light-burning is admittedly the lesser of two evils, and is based on the fundamental assumption that fire prevention cannot protect the forests. On this assumption the light-burner says: "We will accept the losses due to the method in preference to the larger losses which we believe will occur under the other system." There is nothing to show that this fundamental assumption is the correct one, and there is much to show that forest-fire protection as practiced by the Forest Service in California does in the main deliver consistent and effective protection for the timberlands.

· IN · MEMORIAM ·

· ROBERT · HOLLISTER · CHAPMAN ·

As we were about to go to press came the sad news that a distinguished member of the Sierra Club, Major Robert Hollister Chapman, died on Sunday evening, January 11, 1920. Born at New Haven, Connecticut, July 29, 1868, he was only in his fifty-second year and at the summit of his professional career as a topographic engineer. As a member of the United States Geological Survey he explored and mapped some of the wildest portions of the Southern and Western States, including a portion of Death Valley and adjacent deserts, and parts of the high Sierra. At the request of the Canadian Government, he joined the Geological Survey of Canada in 1909, introducing American methods into its work. During the war he was assistant to Brigadier-General Bingham in organizing and perfecting the defenses of New York City. He was an enthusiastic mountaineer, holding a long record of ascents, many of them made in the remote, rugged wilderness of British Columbia and Alberta. For a number of years past he has been the secretary of the American Alpine Club, an organization in which his knowledge, experience, and enthusiasm will be sadly missed. He was a fellow of the Royal Geographical Society of England and of the American Geographical Society. Among his writings are many bulletins published by the governments of the United States and Canada, as well as scientific and descriptive articles. The loss of a man like Major Chapman, a productive scientist of distinguished ability, a comrade and fellow mountaineer of noble character and high purpose, will be sorely felt in many circles. The editorial staff extends to his widow, Frances Andrews Chapman, heartfelt sympathy.

BOOK REVIEWS

EDITED BY MARION RANDALL PARSONS

THE GAME BIRDS OF CALIFORNIA* As a university publication, this is a contribution from the California Museum of Vertebrate Zoology, and the authors are Joseph Grinnell, Harold Child Bryant, and Tracy Irwin Storer. Even the most self-possessed reviewer, if he cares at all for bird-life and the outdoors, must grow enthusiastic over such a book. Not only in the matter of contents, but also in its mechanical excellences of binding, printing and illustrations, this is one of the best pieces of work that has ever come from the University of California Press. The latter deserves to be especially congratulated on the printing of the colored plates. There are sixteen of them—twelve by Louis Agassiz Fuertes and four by Allan Brooks—and they are so beautiful that one is tempted to take them out of the volume and frame them. An equipment of ninety-four text illustrations lends additional aid to the student who desires to identify the different species.

Lest readers of this notice infer from the title that the book is intended solely for sportsmen, let me hasten to state that it "aims to supply the naturalist with complete information to date regarding the life histories of California birds, to give the hunter useful facts concerning the birds he wishes to shoot, to furnish the legislator with helpful suggestions relevant to the preparation of game laws, and to give the conservationist information which will aid him in his efforts to perpetuate bird life." The book fulfills this manifold purpose admirably, and by exhibiting the gaps in our knowledge of many of the species supplies valuable hints to future observers.

The reader will find here a practically complete summary of our knowledge of the one hundred and eight game birds of the State. The extensive collections and field-notes of the Museum of Vertebrate Zoology are a guarantee for the scientific accuracy of the information offered. Besides, Director Joseph Grinnell is undoubtedly right when he declares in the preface his conviction that "the highest plane of scientific output can be accomplished only through co-operative effort. . . . Where one author working alone would make mistakes un-
aware, two, or better, three, are able to check one another's output to advantage." In the opinion of the reviewer the book supersedes, in attractiveness, accuracy, and completeness, everything that has been written on the game birds of California.

* *The Game Birds of California.* (Contribution from the University of California Museum of Vertebrate Zoology.) By JOSEPH GRINNELL, HAROLD CHILD BRYANT, and TRACY IRWIN STORER. University of California Press, Berkeley. 1918. Large 8vo; pp., x + 642. Cloth. Price, \$6.00 net.

Last, but not least, the volume is a valuable manual for the conservationist. Several important species of California game birds are approaching extinction. One is already gone. Nowhere is the necessity of wise conservation set forth more clearly and convincingly. Such work is of great practical service to the State, and for this reason we hope that the book will have a wide distribution and reading. Through every citizen whom it arouses to action something will be done for the welfare and happiness of our future generations of Americans.

W. F. B.

THE BOOK OF THE NATIONAL PARKS* One can imagine the pleasure of the traveler to the west last summer in finding a book which contains information about all the national parks and monuments he might see on his journey. Complete and up-to-date information on the parks, interestingly presented, adequately supplied with maps and illustrations, has hitherto been impossible to obtain. Perhaps it is because Mr. Yard's style is indicative of the indoor man's occasional feasting on scenery rather than the outdoor man considering it almost as much a part of life as his daily bread, that one thinks of *The Book of the National Parks* as distinctively a book for the eastern traveler.

This is as it should be, for the larger part of the United States has still to be introduced to the national parks, and it is well that the presentation should be made by one who pleads the cause of "a higher understanding of Nature's method" to take the place of that "love of beauty spiced by wonder which is the equipment for enjoyment of the average traveler of today." Mr. Yard has made an interesting grouping of his chapters by describing the parks in geological rather than geographical sequence—sedimentary parks, granite parks, volcanic parks, etc.—a device which draws attention to their dominant characteristics.

The stupendous quality of the mountains is dwelt on to greater extent than their more elusive charm. The mountaineer feels a sense of kinship with the stern high country, is at home there, while the dweller in cities is awed but chilled by them. Nature to him is best described in terms of art as a masterpiece, a composition; to the mountaineer it is best interpreted in terms of life. In still another way Mr. Yard proclaims himself to western mountaineers as with us but not yet of us—in his unfortunate conjunction of the names of Galen Clark, Clarence King, and John Muir as geologists of equal claim to consideration. It is not for the layman to question the findings of Mr. Yard's science. But to note within the limits of a page the "speculations" of a Muir overridden by the "minute investigations" and "final solution" of later geologists leads even the most unbelligerent of laymen to remind Mr. Yard that the final solution of today is not always that of tomorrow.

Having thus taken our fling at the effete east, we acknowledge with

**The Book of the National Parks*. By ROBERT STERLING YARD. With maps and illustrations. Charles Scribner's Sons, New York. 1919. Pages, 420. Price, \$3.00 net.

pleasure that the book is by far the most comprehensive document on the parks available to the public; that Mr. Yard has brought to the writing of it a genuine enthusiasm and love for the parks; and that thousands of visitors will gain from it an enjoyment and profit that otherwise they might never have known. M. R. P.

THE BOOK OF A NATURALIST* The impression left by this book of random nature sketches is like that of fireside hours spent with a man at once a naturalist and a delightful companion. Mr.

Hudson lets his memory drift back into the years, bringing to light anecdotes covering a wide range of subjects—the wild horse of the pampas, trained to domestic uses but still restless with the call of the wild; the whimsical guanaco, sportively running away with his master's only available shirt; the wile and guile of serpents and man's superstitions thereon; the heron as a table bird; the social life of rooks; the gypsy charm of foxes. Mr. Hudson is a sentimentalist self-confessed and unashamed. The daily life of wild creatures concerns him most. He has a friendship for all forms of life and loves to "converse with wild animals." However the scientist may regard this form of nature study, there is no doubt that Mr. Hudson has the gift of fascinating the average reader. Apart from his charm of style and the interest of his narratives, the book will appeal strongly to all lovers of animal life who believe that, contrary to the adage, a bird in the bush is infinitely more worth studying than two little mummies in hand in the museum. M. R. P.

CALIFORNIA DESERT TRAILS† Mr. J. Smeaton Chase is the author of two earlier volumes entitled "Yosemite Trails" and "California Coast Trails." The present volume gives the effect of having been written to order, for the purpose of completing a series. The author made a journey to the desert—"two years continuous camping and traveling," he states—and in this book records his impressions. There is a vast amount of detail, and an interesting narrative withal, of what the author did, what his horse did, what various and sundry Indians and other inhabitants did and said. Every milestone of his progress, so to speak, the author carefully describes, every animal and plant (the latter carefully supported by their botanical names in italics)—and yet the book falls short of doing the desert justice. There is too much of the unessential, carefully written down at length. The effect is somewhat that of another traveler who was unable to see the forest because of the trees.

* *The Book of a Naturalist*. By W. H. HUDSON. George H. Doran Company, New York. Pages, 360. Price, \$3.50 net.

† *California Desert Trails*. By J. SMEATON CHASE. Houghton Mifflin Company, Boston and New York. Price, \$3.00 net.

Still, the California deserts are little known to travelers. Mr. Chase shows that they are accessible; that they may be lived in, with some hardship, and enjoyed; that they are full of interest. He should be thanked for his personal impressions of these regions, which he so pleasantly records.

The book is well printed and well illustrated. A little map of some sort would have helped it. There is an appendix of noticeable plants of the desert, accompanied, however, by a warning to botanists that the descriptions are not exact.

A. H. A.

VACATION TRAMPS It is perhaps too much to expect a confirmed Sierran to deliberately make a journey to New England for the express purpose of climbing mountains, though should he do so he might be agreeably surprised at their extent as well as at their beauty. But some day a Sierran may be in that vicinity by chance, and then he would do well to have with him Allen Chamberlain's little volume as a source of inspiration and information.

The New England Highlands are in four States. There are the White Mountains of New Hampshire, the Green Mountains of Vermont, Katahdin in Maine, which Mr. Chamberlain calls the most imposing mountain east of the Rockies, and finally the low but strong-backed Berkshires of Massachusetts. In fact, as Mr. Chamberlain says, "According to the map, this is a very tiny corner of the earth that we live in, but to those who make a practice of searching out its attractive spots it soon becomes evident that one life will not be sufficient to exhaust the possibilities."

Allen Chamberlain knows his New England better than the average man knows his native land, but he is familiar with other parts of the country too. Many Sierra Club members will recall him as a genial companion and very competent mountaineer. His personality shines through even such a compact and modest little book as this *Vacation Tramps*, and to read it is like swinging along the trail again in his company.

F. P. F.

A YEAR The author, in a breezy, interesting style, tells the story of his cruise to equatorial and arctic waters in a craft once despised and still oftentimes rejected by deep-sea sailormen.

The book is by no means a literary gem, but with Dana's "Two Years Before the Mast" fresh in our memory, our standard for tales of the sea may be too severe to permit us to do this work full justice. Again, one may incline to be prejudiced against a "landlubber"

* *Vacation Tramps in New England Highlands*. By ALLEN CHAMBERLAIN. Illustrated. Houghton Mifflin Company, Boston and New York. 1919.
† *A Year with a Whaler*. By WALTER NOBLE BURNS. The Macmillan Company, New York. 1919. Price, \$2.00.

who, having been warned of the hardships to be expected on a whaling vessel, insisted upon shipping "for the adventure of the thing, because he wanted to go," and then made at least two desperate attempts to desert. However, the book is well worth reading for its excellent descriptions of the habits of whales, seal, walrus, and polar bears, as well as accounts of adventures in bagging them.

HOMER T. MILLER

FIELD AND STUDY* Another welcome book has come to us from John Burroughs in *Field and Study*. The book has two parts, of which the first and larger is taken up by Mr. Burroughs' characteristic and inimitable sketches of plant and animal life. Birds come in here for the predominant share of his attention—birds in all phases, nesting, mating, migrating. But plants, insects, wild animals, and even friend dog, are also presented to us. In all these sketches we find Mr. Burroughs the close observer of the facts of nature, who pursues his inquiries with sympathy and imagination, so that we get from him accurate knowledge which is a pleasure in the acquiring. Under his virile touch the search for a bird's-nest is like the hunt for a treasure island. He says: "Nature lore is a mixture of love and knowledge, and it comes more by way of the heart than of the head." It is perhaps because of this attitude that John Burroughs has achieved his impressive position in the realm of nature study. But it is equally a pleasure to read these sketches on account of their style, limpid clear and beautiful.

In the latter portion of the volume Mr. Burroughs discusses various broad topics, such as literature, religion, evolution, etc. An illuminating appraisal of his friend, Walt Whitman, is the best of this section. In treating his other topics, Mr. Burroughs is usually content to raise fundamental questions without endeavoring to give answers, a method not wholly satisfactory.

W. W. LYMAN, JR.

ADVENTURES This book by S. Hall Young, the owner of John Muir's IN ALASKA† little "Stickeen," is a collection of eight stories of actual adventure in Alaska, both at Nome and in the Klondyke. The author is a minister who has spent forty years of his life in Alaska, meeting the need which such a new land of wild life and adventure must have for the missionary. The stories are interesting, well told, and wholesome; the descriptions are good, and one feels upon reading these episodes of real life that the author truly understood his work, was remarkably successful in it, and that the purpose and hope of his little book, to "afford healthy-minded young people a true idea of some phases of human and animal life there" (in Alaska), has been achieved.

DAISY MAY HUBER

**Field and Study*. By JOHN BURROUGHS. Houghton Mifflin Company, Boston and New York. Price, \$1.50 net.

†*Adventures in Alaska*. By S. HALL YOUNG. Illustrated. F. H. Revell Company. 1919. Pages, 181. Price, \$1.25 net.

THE LOG OF A TIMBER CRUISER* It is not surprising that young men go into the Forest Service. Here is a record by one of the Service men of six months' "cruising" in the mountains of southern New Mexico, a record of the actual life and day-to-day duties of these men in the field—a record of grilling hard work, but work that the seasoned, trained-down man delights in being able to do, and full of the fascination of constant novelty.

This particular record is unaffected, full of spirit, full of the humor which animates real American men-folks when they live together "close to nature"—and the author and the party of which he was one are all interesting people. The technical side of the timber-cruiser's duties is simply brought out, as well as his hard work and his simple but real pleasures. Truly, if this is the Forest Service's timber cruising, there will never be any lack of recruits for a service which offers so much that is satisfying to the appetite of keen young men for action and experience with a little spice of adventure.

The illustrations are excellent; one wonders where the author found opportunity for making such good and appropriate photographs.

A. H. A.

THE GRIZZLY BEAR† "Man's loyal companion," Mr. Mills calls the grizzly bear. For most of us this is a new conception of the dread beast

of nursery days. But however we have been accustomed to thinking of him, surely there is no animal in which grown-ups are so readily interested, nor which so entrances the children. I remember watching in an audience the rapt faces of a group of children to whom, in his inimitable way, Mr. Mills was recounting the story included in this volume of Johnny and Jenny, the twin bears who grew up in his house. Lion cubs or tiger kittens could never so have enthralled them. Mr. Mills make us feel all the human qualities of the bears as a few rare authors have known how to do with dogs. This collection of bear stories and observations, the fruit of many years intimacy with grizzly bears, is a book for every one, but perhaps above all for the growing boy.

M. R. P.

THE ADVENTURES OF A NATURE GUIDE‡ Nature writers generally consider themselves happy in the description of a single incident like the finding of a woodpecker's nest. With Mr. Mills such an incident is apt to be only a link in an endless chain of experience. He revisits the woodpecker's nest in autumn and finds a chipmunk evicting a field-mouse from it, to be routed out him-

**The Log of a Timber Cruiser*. By WILLIAM PINKNEY LAWSON. Duffield & Company, New York. 1915.

†*The Grizzly Bear*. By ENOS A. MILLS. Illustrated. Houghton Mifflin Company, Boston and New York. 1919. Pages, 284. Price, \$2.00 net.

‡*The Adventures of a Nature Guide*. By ENOS A. MILLS. Illustrated. Doubleday Page & Company, New York. Pages, 271.

self by a bluebird next spring. Years of observation in both summer and winter have given Mr. Mills a wealth of interesting material apparently inexhaustible. "A good time for a vacation is whenever you can spare the time," is his motto. One cannot read this latest book, as full of enthusiasm as the first, without agreeing with him not only that "the wilderness is one of the safest and the most interesting places on earth," but also that "People are made and nations perpetuated through the right use of leisure time." M. R. P.

NEW RIVERS The sub-title describes this book as the "yarn of two amateur explorers." It is a yarn well spun and well worth the spinning. Several of the rivers traversed are not, indeed, as unfamiliar as the title would denote. Almost the identical course of the two amateur explorers over the headwaters of the Fraser and the Peace was described two years ago in these columns. The Hay River, however, flowing into Great Slave Lake, is a more unknown field, and the visit to the wonderful Alexandra Falls makes a fine climax to the narrative. Much of the journey was made in a canvas canoe, the "Blunderbuss." Mr. Footner and his companion reached the Hay River by trail from Fort Vermilion on the Peace River. The story is told in straightforward, manly fashion, boyishly full of fun and enthusiasm. The photographs were taken by the two adventurers and add much to the book's charm. M. R. P.

THE APPLEWOMAN How an eastern woman, entirely inexperienced in farming matters, made a success of developing a quarter-section of Government land into an orchard is the theme of this book. It is presented in quasi-fiction form, its characters drawn, apparently, from neighbors or inhabitants of that region of Washington. In spite of the fact that the book is more of a photograph-album than a painting, it is not without its value in picturing one phase of development in the West. M. R. P.

Our fellow club member and mountaineer, LeRoy Jeffers, has during the past year been an industrious propagator of the gospel of the mountains and the outdoor life. The May and June numbers of *Scribner's Magazine* contained beautifully illustrated articles from his pen on "Memories of the Mountains of California" and "Mountaineering in the Sierra Nevada." His two articles on the Grand Cañon appeared in the July number of *Travel* and the September number of *Motor Life*.

* *New Rivers of the North*. By HULBERT FOOTNER. With photographs by Auville Eager and the author. George H. Doran Company, New York. Pages, 281. Price, \$2.00 net.

† *The Applewoman of the Klickitat*. By ANNA VAN RENSSELAER MORRIS. Illustrated. Duffield & Co., New York. Pages, 271. Price, \$1.75 net.

In an earlier number of the latter had appeared his account of "Mountaineering in the Canadian Rockies." Doubtless these articles and illustrations did much to swell the great tide of visitors which set toward the national parks last summer.

W. F. B.

The Bulletins of the Mazama Club and of the Mountaineers contain much that is of interest to the members of the Sierra Club. A limited number are on sale at the club rooms. The price of Mazama is 75 cents, of the Mountaineer 50 cents.



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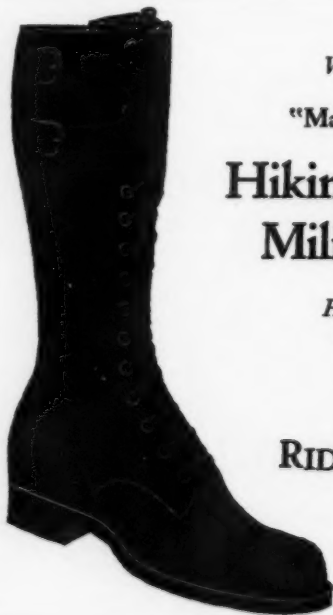
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